IIT Architecture Chicago
Undergraduate and Graduate
Cloud Studios

Metropolis Research Report

Theme
Metropolitan Data

Studio Professors
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Dario Trabucco
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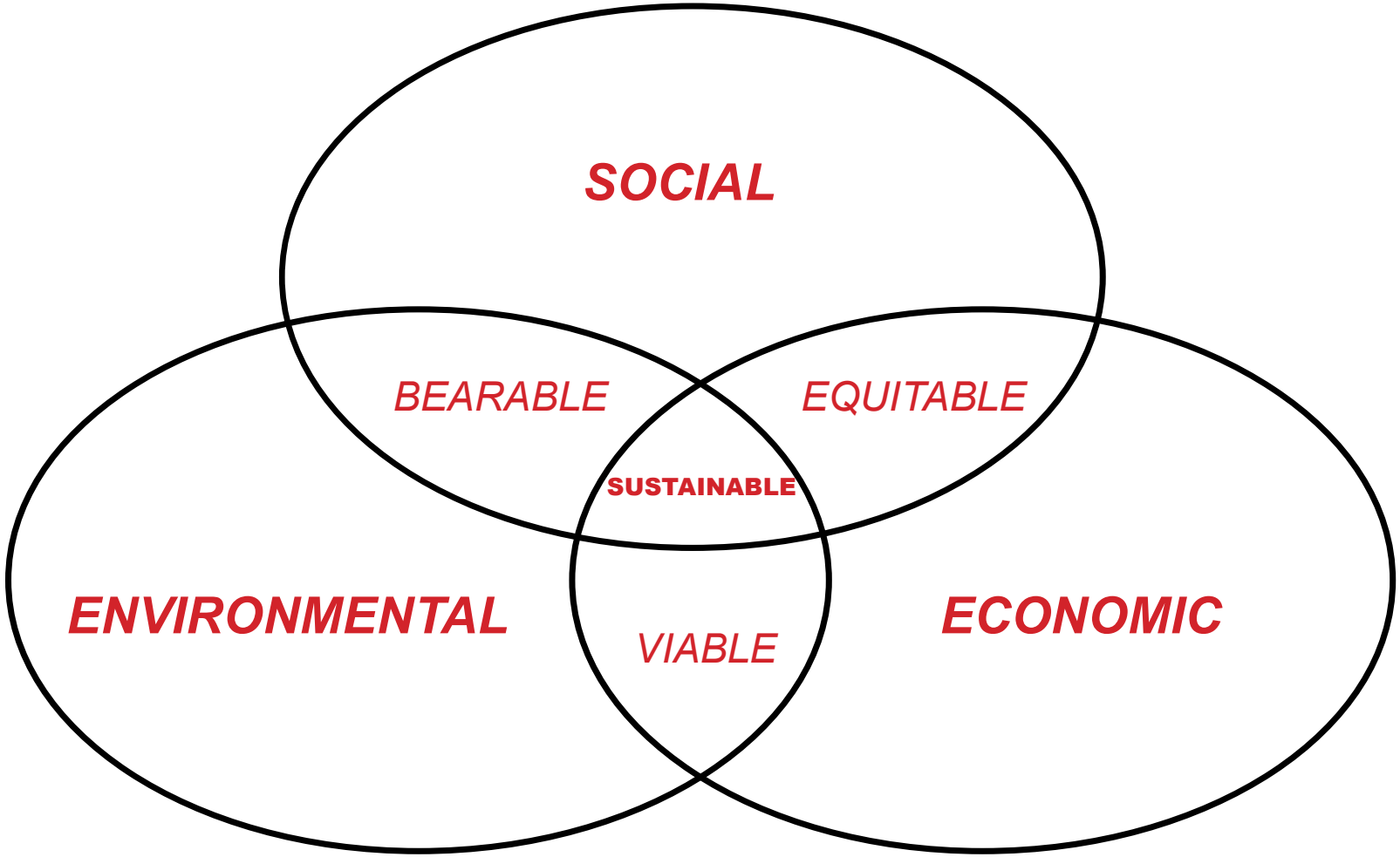
Towards Sustainable Vertical Urbanism

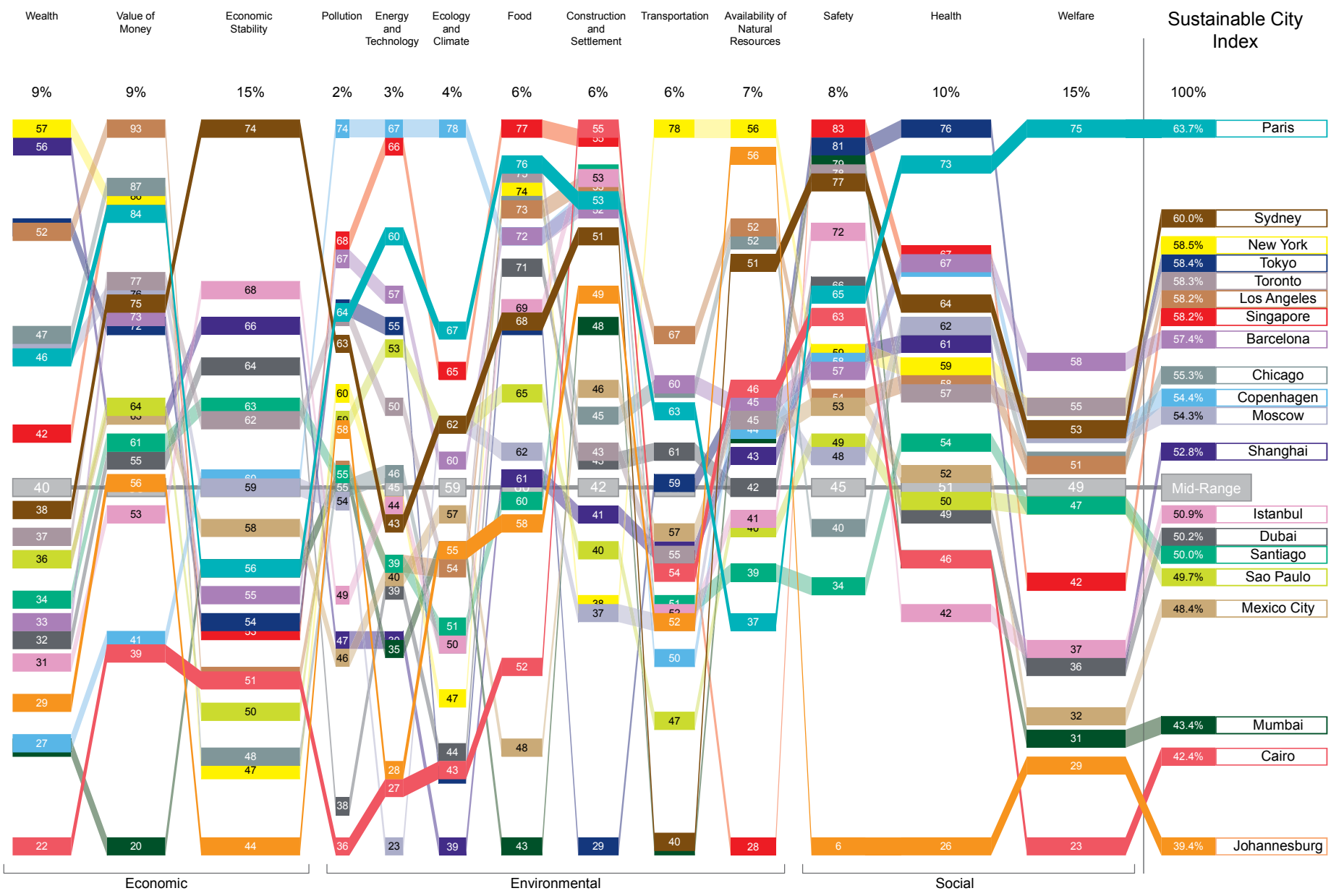
IIT College of Architecture
ILLINOIS INSTITUTE OF TECHNOLOGY

Council on Tall Buildings and Urban Habitat

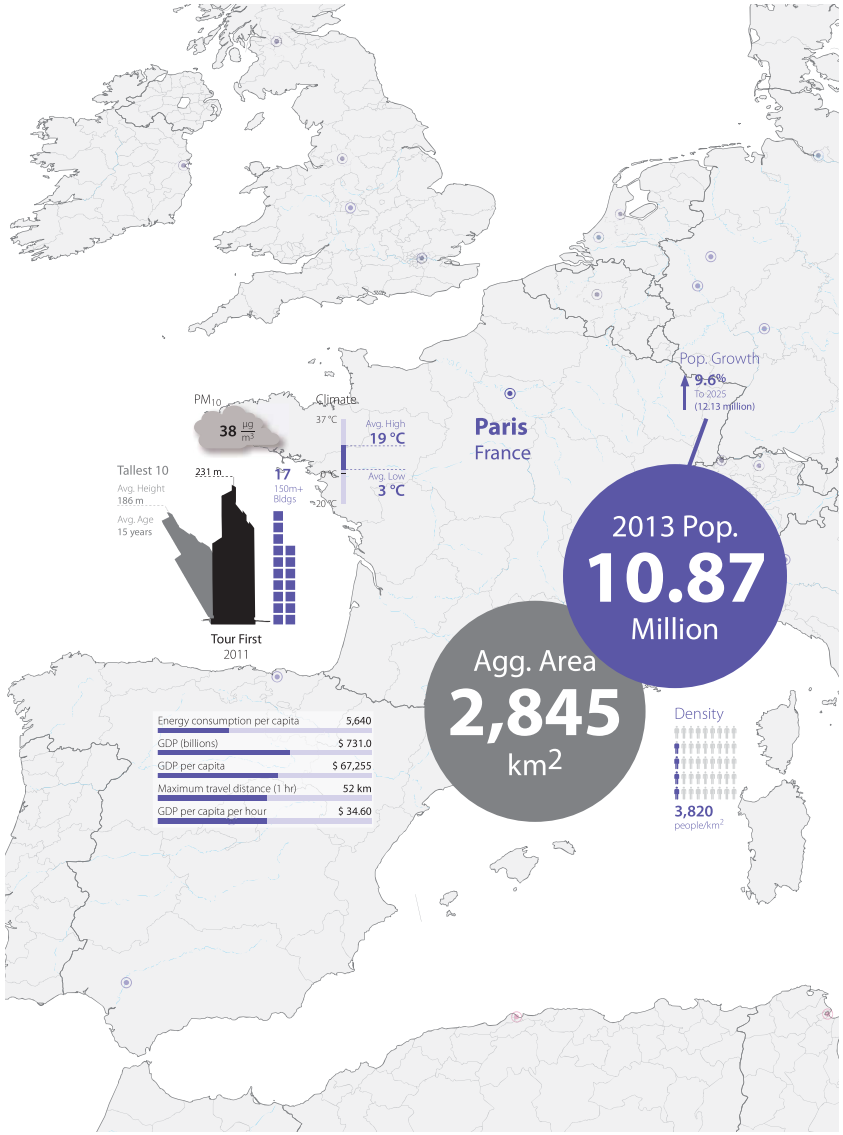
What contributes to the sustainability of cities?


SOCIAL
BEARABLE
EQUITABLE
SUSTAINABLE
ENVIRONMENTAL
VIABLE
ECONOMIC

PARIS	63.7%
SYDNEY	60.0%
NEW YORK CITY	58.5%
TOKYO	58.4%
TORONTO	58.3%
LOS ANGELES	58.2%
SINGAPORE	58.2%
BARCELONA	57.4%
CHICAGO	55.3%
COPENHAGEN	54.4%
MOSCOW	54.3%
SHANGHAI	52.8%
ISTANBUL	50.9%
DUBAI	50.2%
SANTIAGO	50.0%
SAO PAULO	49.7%
MEXICO CITY	48.4%
MUMBAI	43.4%
CAIRO	42.4%
JOHANNESBURG	39.4%


Wealth
Value of Money
Economic Stability
Pollution
Energy and Technology
Ecology and Climate
Food
Construction and Settlement
Transportation
Availability of Natural Resources
Safety
Health
Welfare
Sustainable City Index
9%
9%
15%
2%
3%
4%
6%
6%
6%
7%
8%
10%
15%
100%
Paris 63.7%
Sydney 60.0%
New York 58.5%
Tokyo 58.4%
Toronto 58.3%
Los Angeles 58.2%
Singapore 58.2%
Barcelona 57.4%
Chicago 55.3%
Copenhagen 54.4%
Moscow 54.3%
Shanghai 52.8%
Mid-Range
Istanbul 50.9%
Dubai 50.2%
Santiago 50.0%
Sao Paulo 49.7%
Mexico City 48.4%
Mumbai 43.4%
Cairo 42.4%
Johannesburg 39.4%
Economic
Environmental
Social

PARIS



OVERALL SCORE 63.7%

OVERALL RANK 1st

ECONOMIC

Economic Stability	56%	11th
Wealth	46%	6th
Value of Money	84%	5th

SOCIAL

Health	73%	2nd
Safety	63%	13th
Welfare	75%	1st

ENVIRONMENTAL

Natural Resources	37%	19th
Ecology and Climate	67%	2nd
Transportation	63%	4th
Pollution	74%	5th
Construction and Settlement	59%	6th
Food	75%	4th
Energy and Technology	60%	3rd

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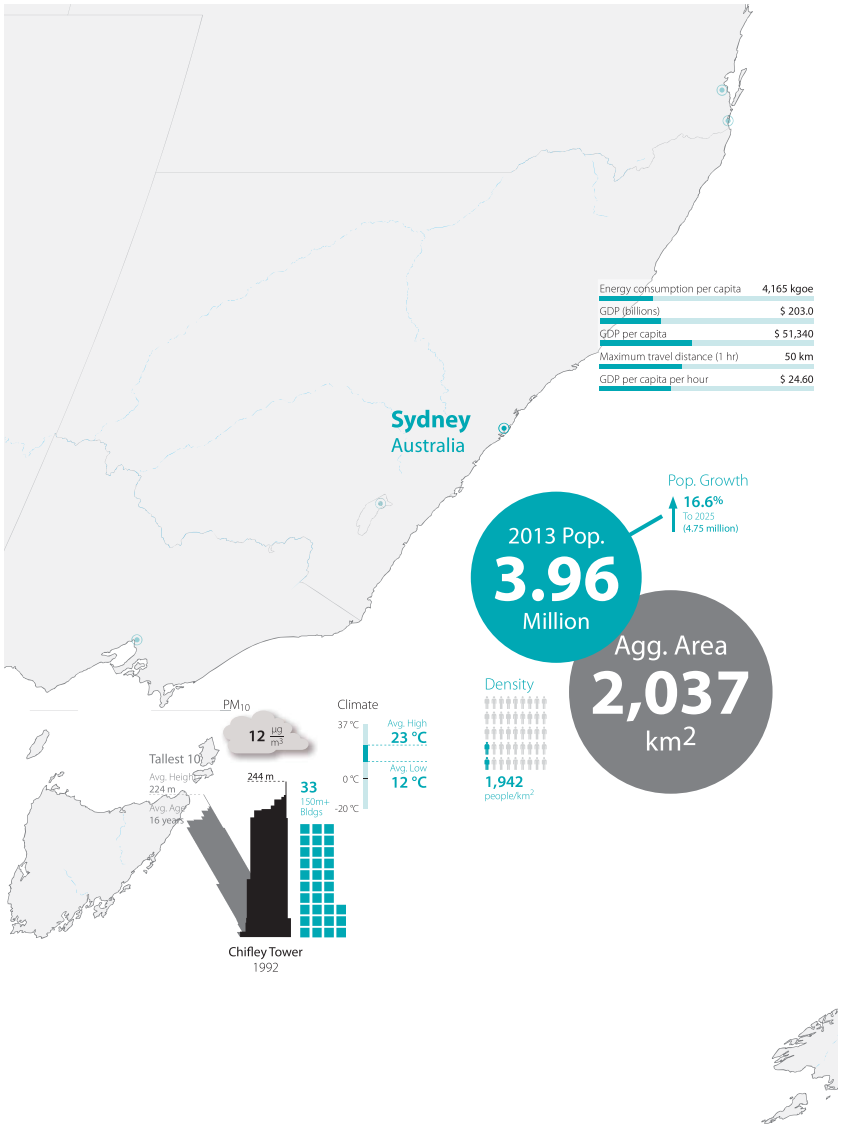
SYDNEY



OVERALL SCORE 60.0%

OVERALL RANK 2nd

ECONOMIC

Economic Stability	74%	1st
Wealth	38%	9th
Value of Money	75%	8th

SOCIAL

Health	64%	6th
Safety	78%	7th
Welfare	53%	5th

ENVIRONMENTAL

Natural Resources	51%	5th
Ecology and Climate	62%	4th
Transportation	40%	19th
Pollution	73%	7th
Construction and Settlement	56%	7th
Food	70%	10th
Energy and Technology	43%	11th

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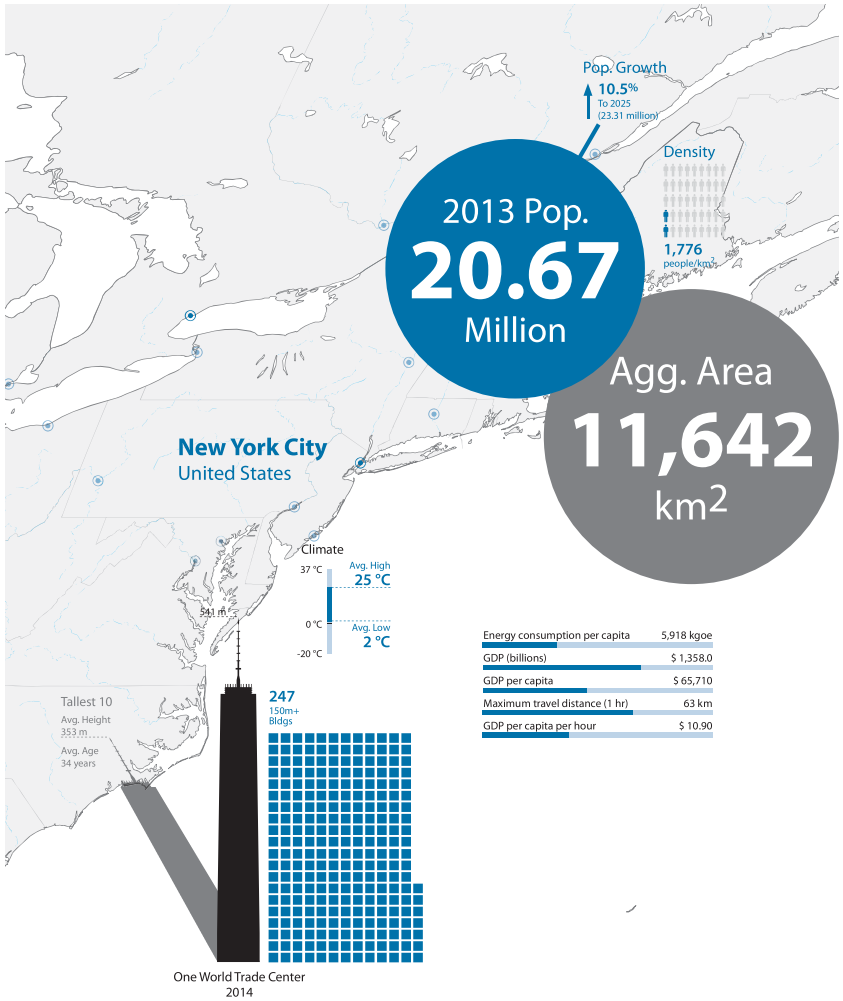
NEW YORK CITY



OVERALL SCORE 58.5%

OVERALL RANK 3rd

ECONOMIC		
Economic Stability	47%	19th
Wealth	57%	1st
Value of Money	86%	3rd
SOCIAL		
Health	59%	10th
Safety	65%	12th
Welfare	55%	3rd
ENVIRONMENTAL		
Natural Resources	56%	1st
Ecology and Climate	47%	16th
Transportation	78%	1st
Pollution	70%	8th
Construction and Settlement	39%	18th
Food	73%	6th
Energy and Technology	44%	10th

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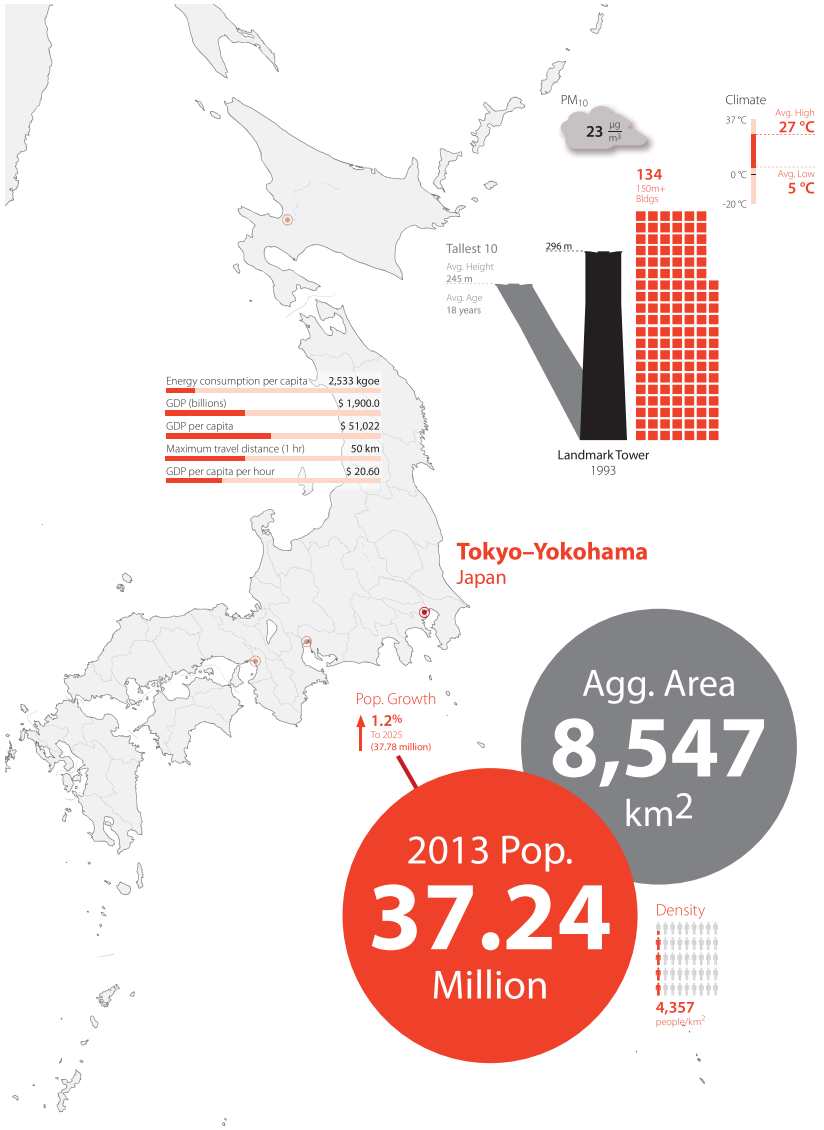
TOKYO



OVERALL SCORE 58.4%

OVERALL RANK 4th

ECONOMIC		
Economic Stability	54%	13th
Wealth	52%	3rd
Value of Money	72%	10th
SOCIAL		
Health	76%	1st
Safety	86%	2nd
Welfare	53%	6th
ENVIRONMENTAL		
Natural Resources	45%	9th
Ecology and Climate	43%	18th
Transportation	59%	7th
Pollution	75%	4th
Construction and Settlement	33%	20th
Food	67%	13th
Energy and Technology	55%	5th

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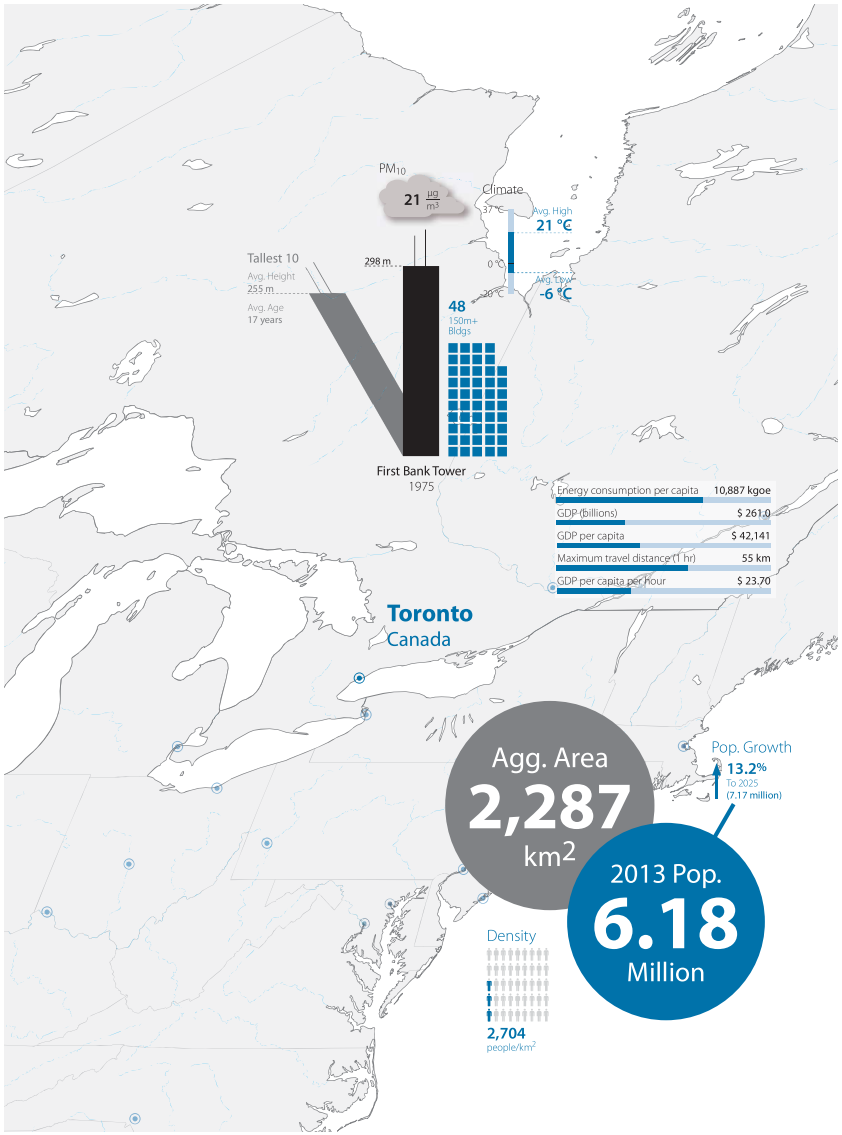
TORONTO



OVERALL SCORE 58.3%

OVERALL RANK 5th

ECONOMIC

Economic Stability	62%	6th
Wealth	37%	10th
Value of Money	77%	6th

SOCIAL

Health	57%	12th
Safety	79%	6th
Welfare	55%	4th

ENVIRONMENTAL

Natural Resources	45%	10th
Ecology and Climate	55%	9th
Transportation	55%	10th
Pollution	74%	6th
Construction and Settlement	49%	13th
Food	74%	5th
Energy and Technology	50%	7th

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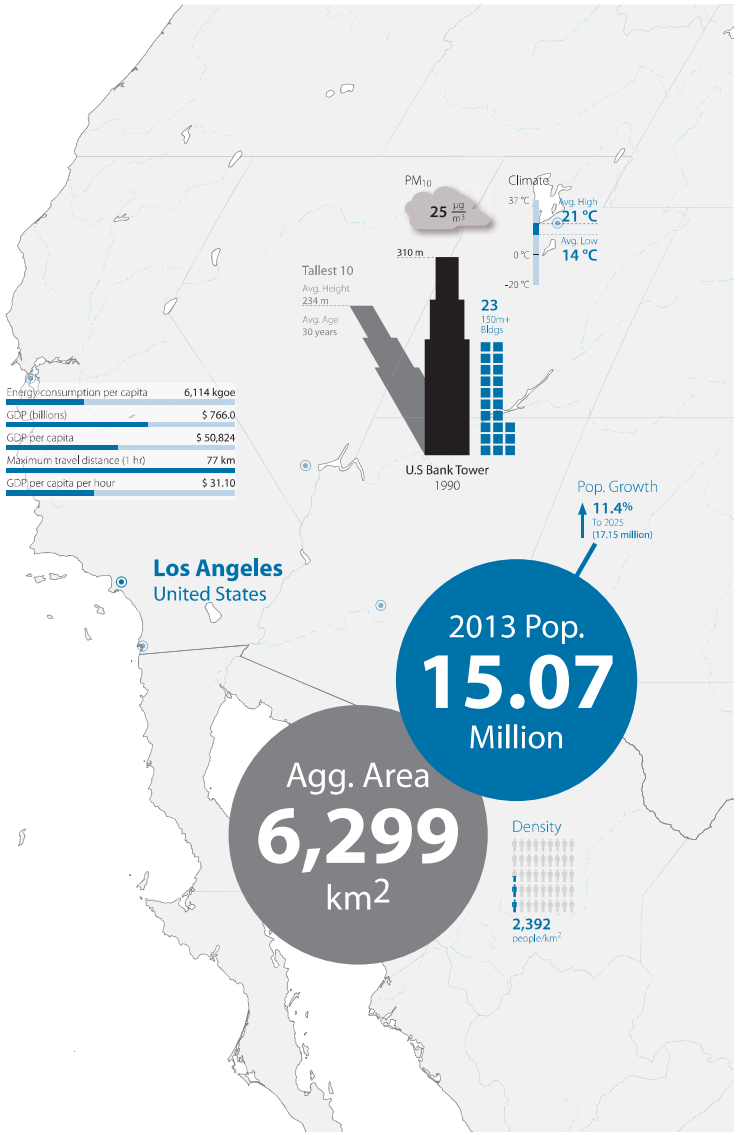
LOS ANGELES



OVERALL SCORE 58.2%

OVERALL RANK 6th

ECONOMIC

Economic Stability	51%	15th
Wealth	52%	3rd
Value of Money	93%	1st

SOCIAL

Health	58%	11th
Safety	54%	14th
Welfare	51%	10th

ENVIRONMENTAL

Natural Resources	52%	3rd
Ecology and Climate	54%	12th
Transportation	61%	2nd
Pollution	56%	10th
Construction and Settlement	53%	3rd
Food	73%	3rd
Energy and Technology	40%	12th

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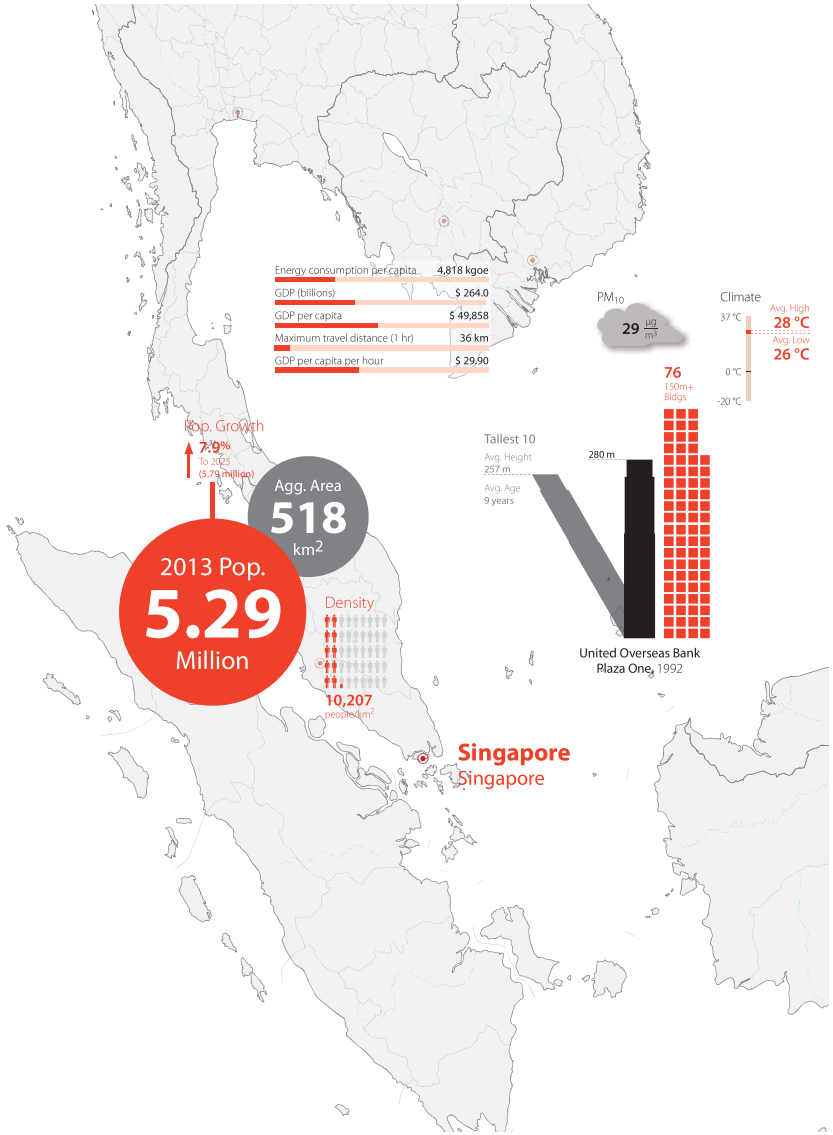
SINGAPORE



OVERALL SCORE 58.2%

OVERALL RANK 7th

ECONOMIC			
Economic Stability		53%	14th
Wealth		42%	8th
Value of Money		84%	4th
SOCIAL			
Health		67%	3rd
Safety		87%	1st
Welfare		42%	13th
ENVIRONMENTAL			
Natural Resources		28%	20th
Ecology and Climate		65%	3rd
Transportation		55%	11th
Pollution		78%	2nd
Construction and Settlement		60%	2nd
Food		79%	1st
Energy and Technology		66%	2nd

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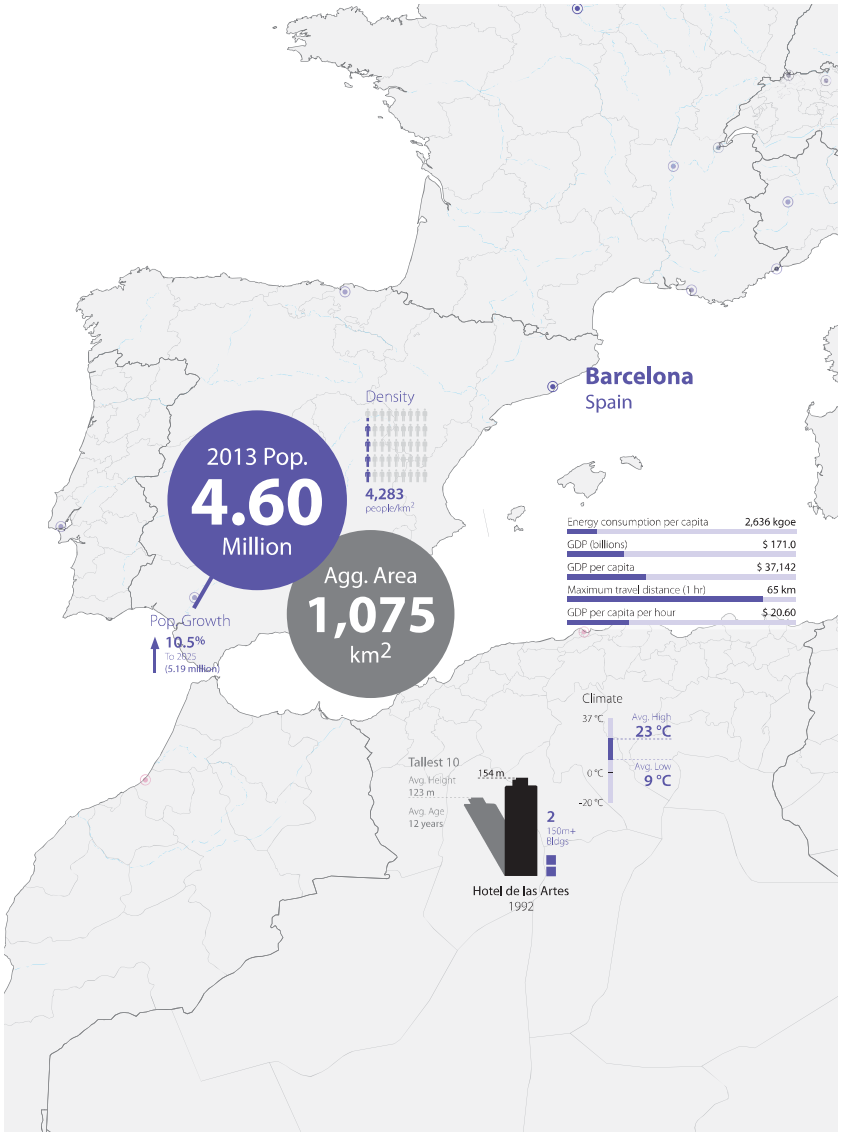
BARCELONA



OVERALL SCORE 57.4%

OVERALL RANK 8th

ECONOMIC

Economic Stability	55%	12th
Wealth	33%	14th
Value of Money	73%	9th

SOCIAL

Health	67%	4th
Safety	75%	8th
Welfare	58%	2nd

ENVIRONMENTAL

Natural Resources	45%	7th
Ecology and Climate	60%	7th
Transportation	60%	6th
Pollution	77%	3rd
Construction and Settlement	59%	4th
Food	73%	7th
Energy and Technology	57%	4th

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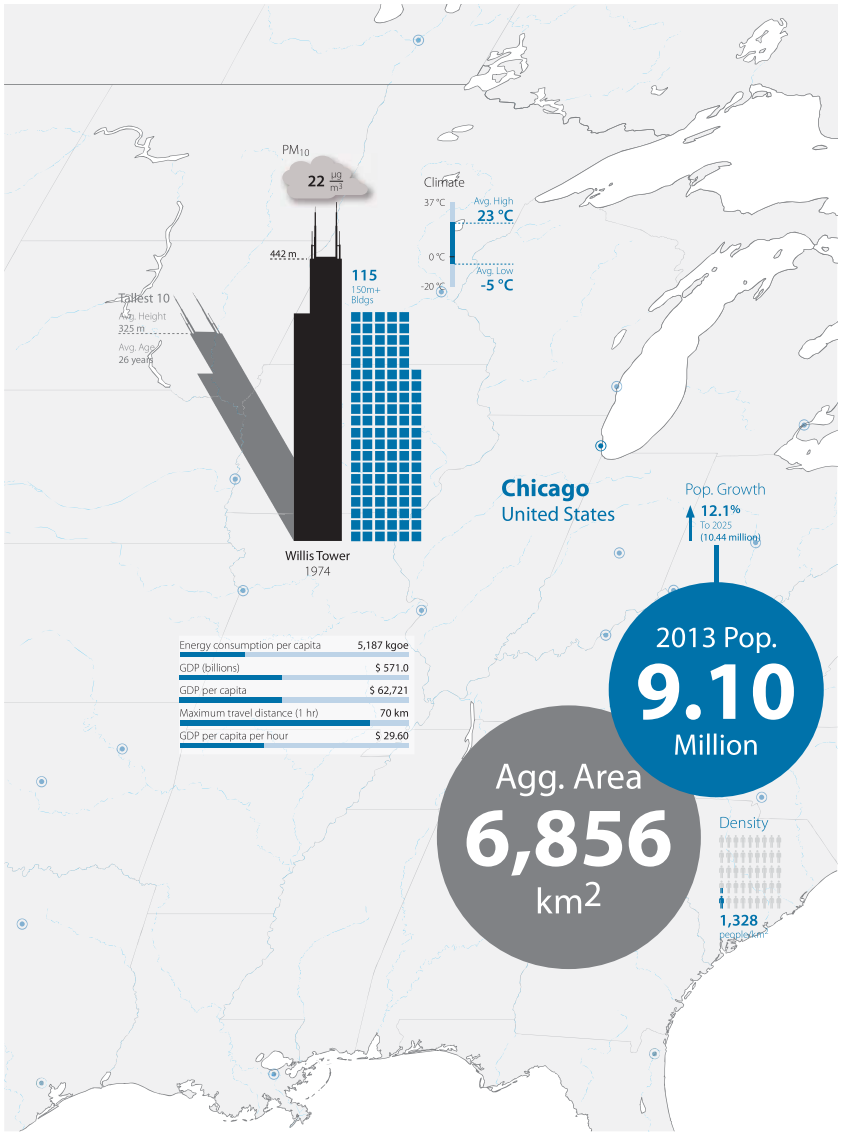
CHICAGO



OVERALL SCORE 55.3%

OVERALL RANK 9th

ECONOMIC

Economic Stability	48%	18th
Wealth	47%	5th
Value of Money	87%	2nd

SOCIAL

Health	62%	8th
Safety	46%	19th
Welfare	51%	9th

ENVIRONMENTAL

Natural Resources	52%	4th
Ecology and Climate	50%	14th
Transportation	64%	3rd
Pollution	65%	12th
Construction and Settlement	51%	10th
Food	76%	2nd
Energy and Technology	46%	8th

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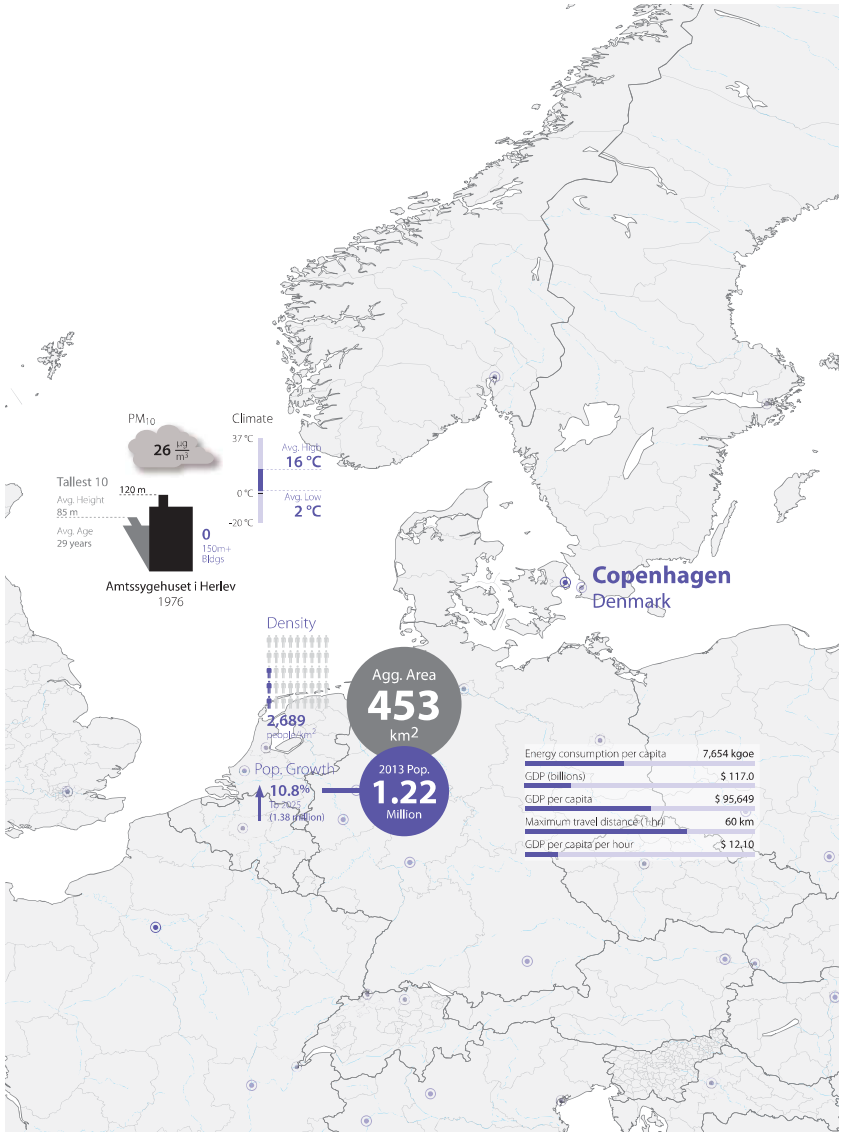
COPENHAGEN



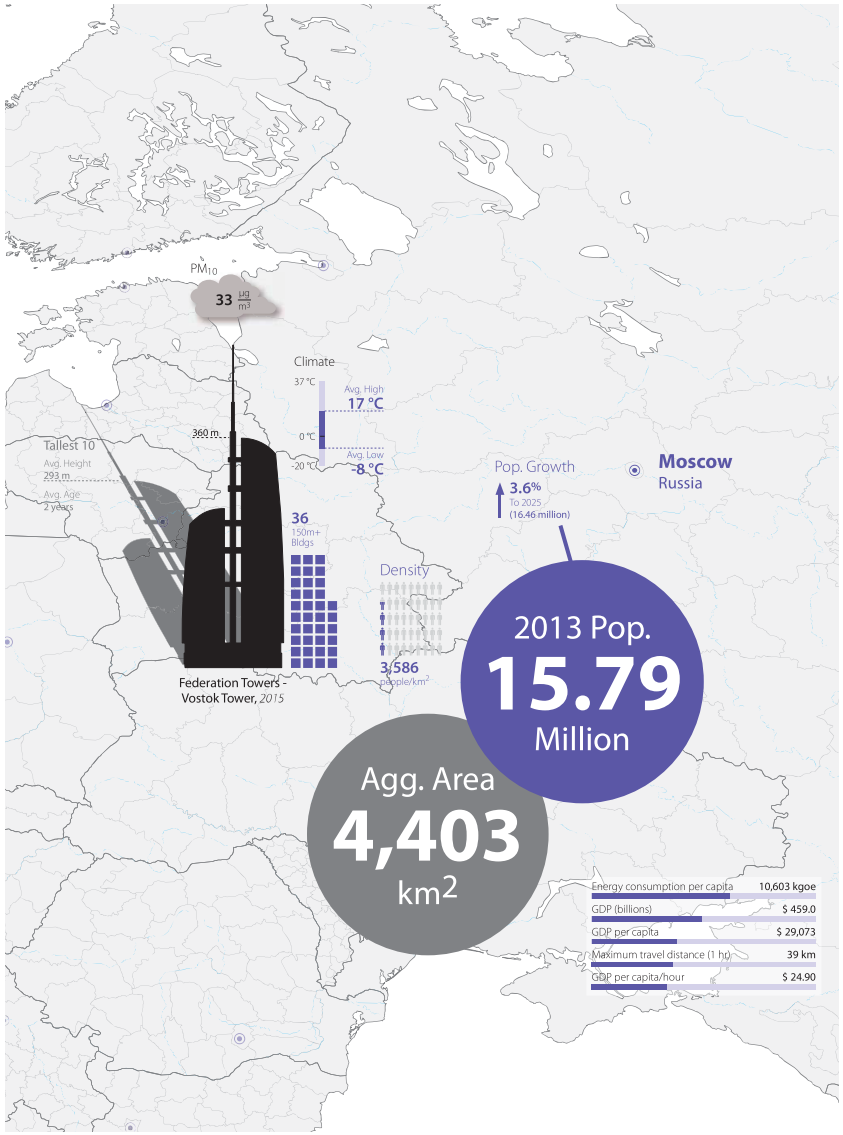
OVERALL SCORE 54.4%

OVERALL RANK 10th

ECONOMIC			
Economic Stability	60%	7th	
Wealth	27%	18th	
Value of Money	41%	18th	
SOCIAL			
Health	66%	5th	
Safety	70%	11th	
Welfare	52%	8th	
ENVIRONMENTAL			
Natural Resources	45%	12th	
Ecology and Climate	62%	1st	
Transportation	52%	17th	
Pollution	84%	1st	
Construction and Settlement	60%	1st	
Food	71%	8th	
Energy and Technology	67%	1st	

CAITLIN MEHTA / JEFF PETRICK

MOSCOW



OVERALL SCORE 54.3%

OVERALL RANK 11th

ECONOMIC

Economic Stability	59%	8th
Wealth	46%	6th
Value of Money	76%	7th

SOCIAL

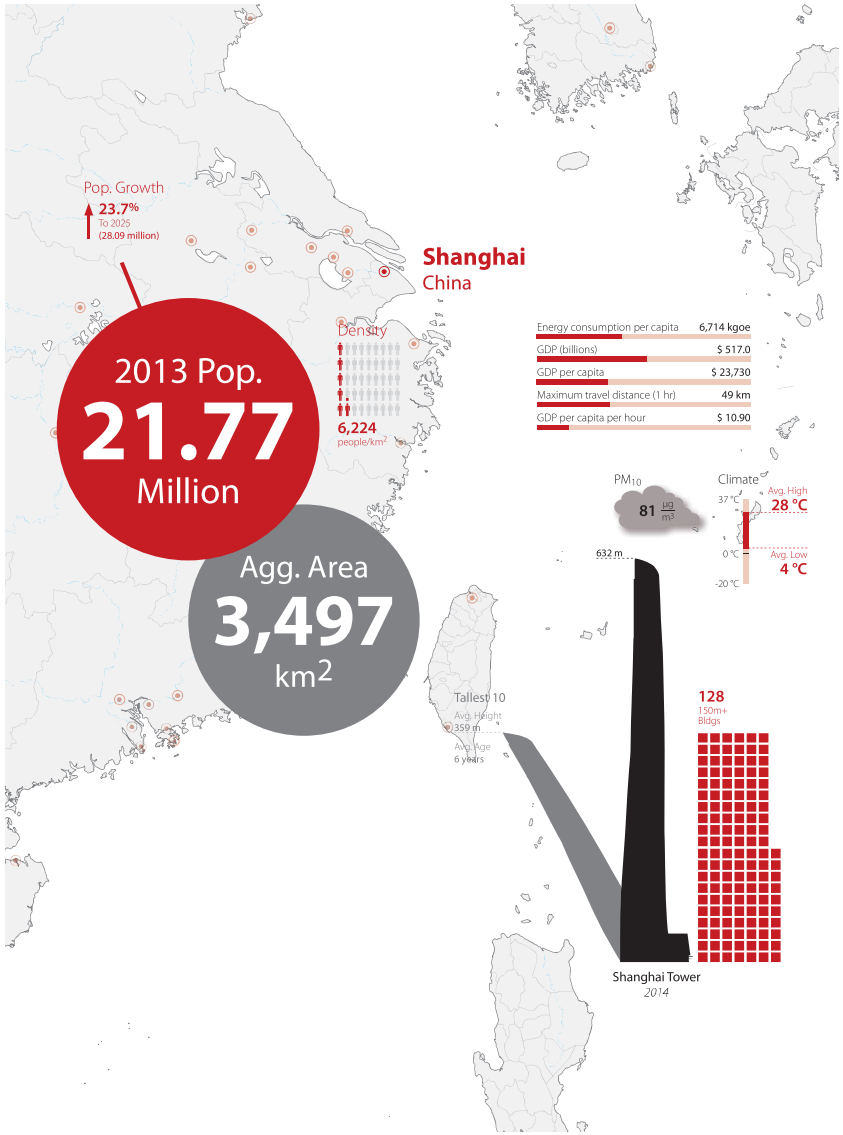
Health	62%	7th
Safety	53%	15th
Welfare	53%	7th

ENVIRONMENTAL

Natural Resources	45%	8th
Ecology and Climate	62%	4th
Transportation	52%	15th
Pollution	63%	14th
Construction and Settlement	43%	16th
Food	60%	14th
Energy and Technology	23%	20th

CAITLIN MEHTA / JEFF PETRICK

SHANGHAI



OVERALL SCORE 52.8%

OVERALL RANK 12th

ECONOMIC

Economic Stability	66%	3rd
Wealth	56%	2nd
Value of Money	63%	12th

SOCIAL

Health	61%	9th
Safety	82%	3rd
Welfare	36%	15th

ENVIRONMENTAL

Natural Resources	43%	14th
Ecology and Climate	39%	20th
Transportation	56%	9th
Pollution	48%	18th
Construction and Settlement	41%	18th
Food	60%	17th
Energy and Technology	30%	17th

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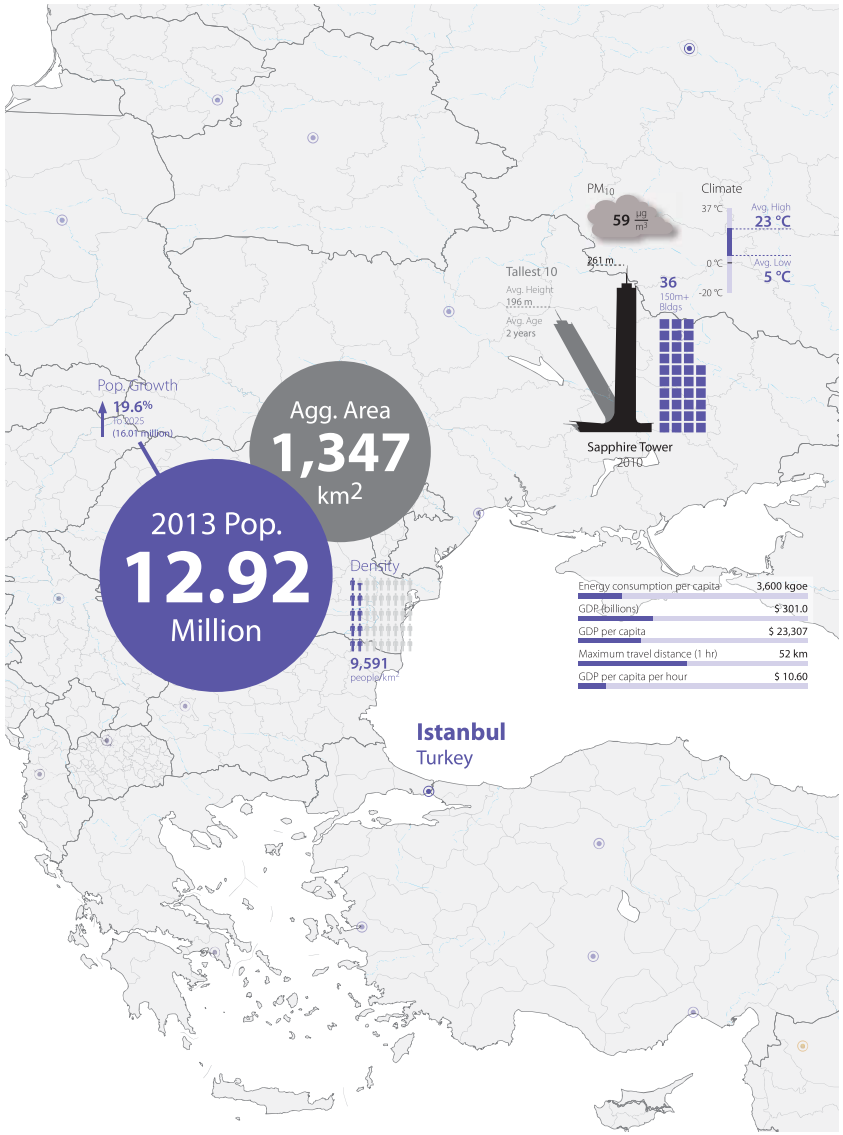
ISTANBUL



OVERALL SCORE 50.9%

OVERALL RANK 13th

ECONOMIC

Economic Stability	68%	2nd
Wealth	31%	16th
Value of Money	53%	17th

SOCIAL

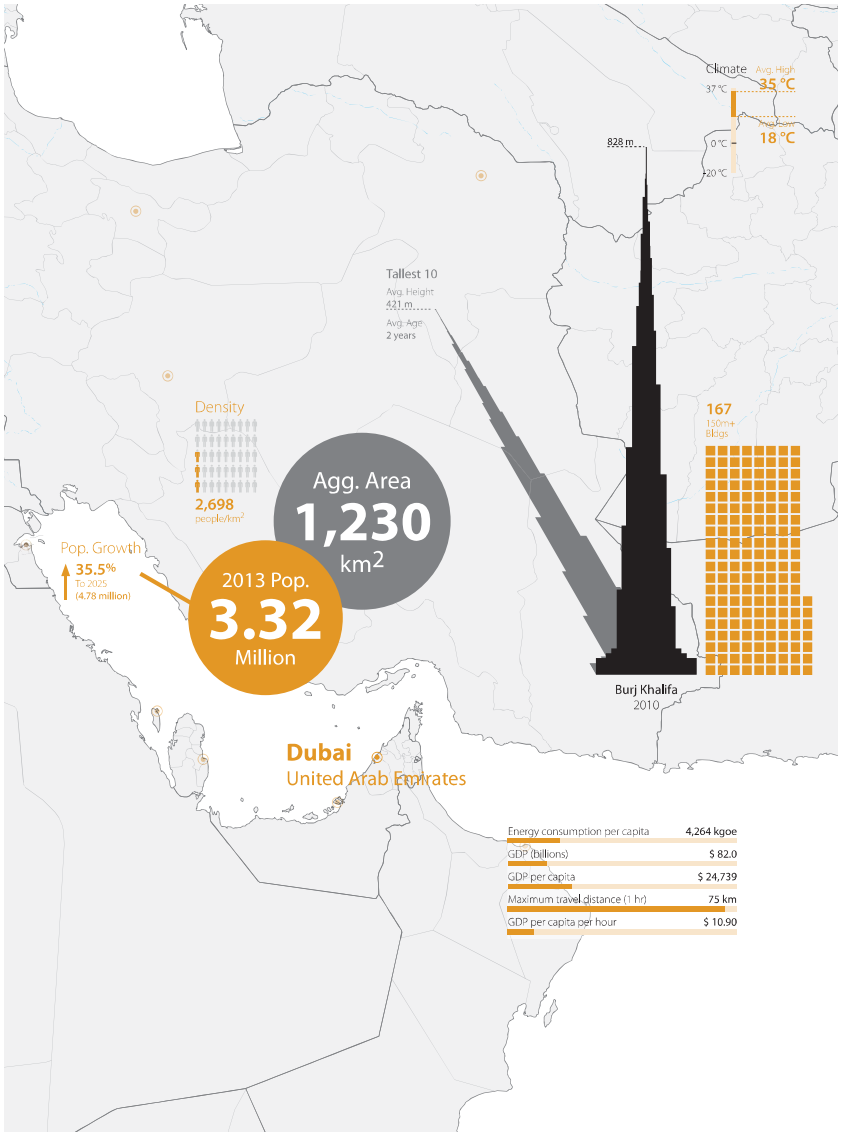
Health	42%	19th
Safety	71%	10th
Welfare	37%	14th

ENVIRONMENTAL

Natural Resources	41%	16th
Ecology and Climate	50%	14th
Transportation	52%	13th
Pollution	58%	15th
Construction and Settlement	59%	5th
Food	71%	9th
Energy and Technology	44%	4th

CAITLIN MEHTA / JEFF PETRICK

DUBAI



OVERALL SCORE 50.2%

OVERALL RANK 14th

ECONOMIC

Economic Stability	64%	4th
Wealth	32%	15th
Value of Money	55%	16th

SOCIAL

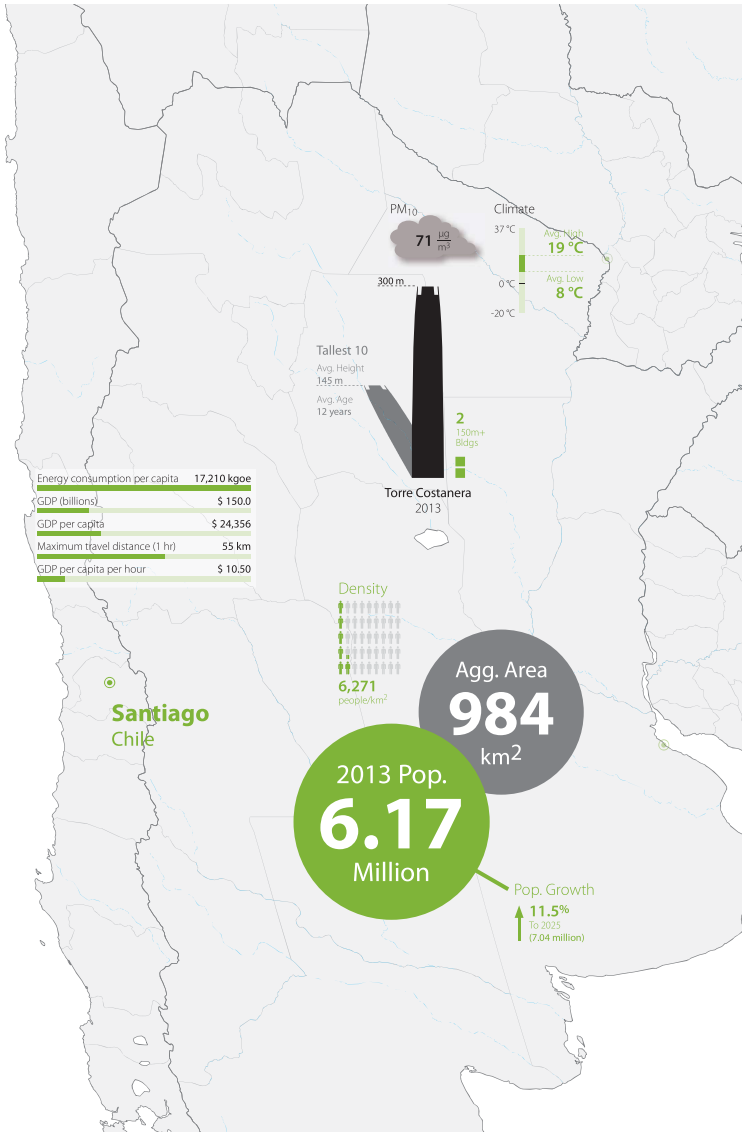
Health	49%	16th
Safety	80%	4th
Welfare	36%	16th

ENVIRONMENTAL

Natural Resources	42%	15th
Ecology and Climate	44%	17th
Transportation	61%	5th
Pollution	48%	17th
Construction and Settlement	49%	12th
Food	67%	11th
Energy and Technology	39%	15th

CAITLIN MEHTA / JEFF PETRICK

SANTIAGO



OVERALL SCORE 50.0%

OVERALL RANK 15th

ECONOMIC

Economic Stability	63%	5th
Wealth	34%	13th
Value of Money	61%	14th

SOCIAL

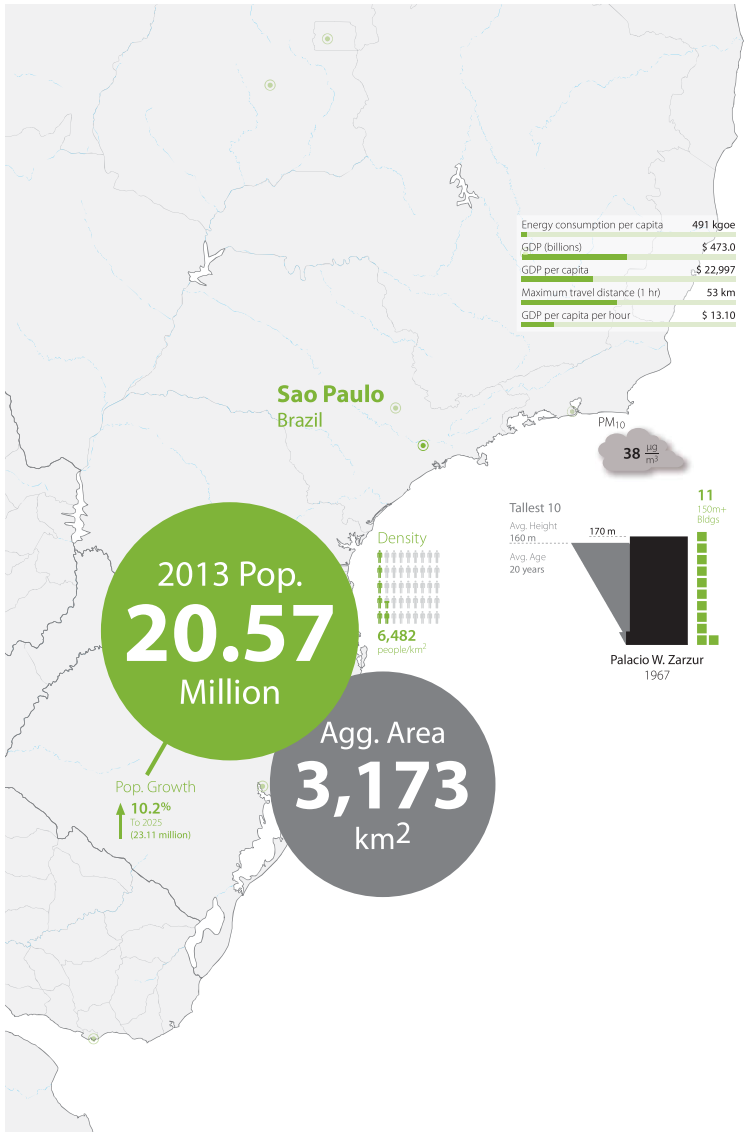
Health	54%	13th
Safety	48%	17th
Welfare	47%	12th

ENVIRONMENTAL

Natural Resources	39%	18th
Ecology and Climate	51%	13th
Transportation	51%	16th
Pollution	64%	13th
Construction and Settlement	48%	14th
Food	63%	14th
Energy and Technology	39%	14th

CAITLIN MEHTA / JEFF PETRICK

SAO PAULO



OVERALL SCORE 49.7%

OVERALL RANK 16th

ECONOMIC

Economic Stability	50%	17th
Wealth	36%	11th
Value of Money	64%	11th

SOCIAL

Health	50%	15th
Safety	47%	18th
Welfare	48%	11th

ENVIRONMENTAL

Natural Resources	40%	17th
Ecology and Climate	62%	4th
Transportation	47%	18th
Pollution	68%	9th
Construction and Settlement	42%	17th
Food	67%	12th
Energy and Technology	53%	6th

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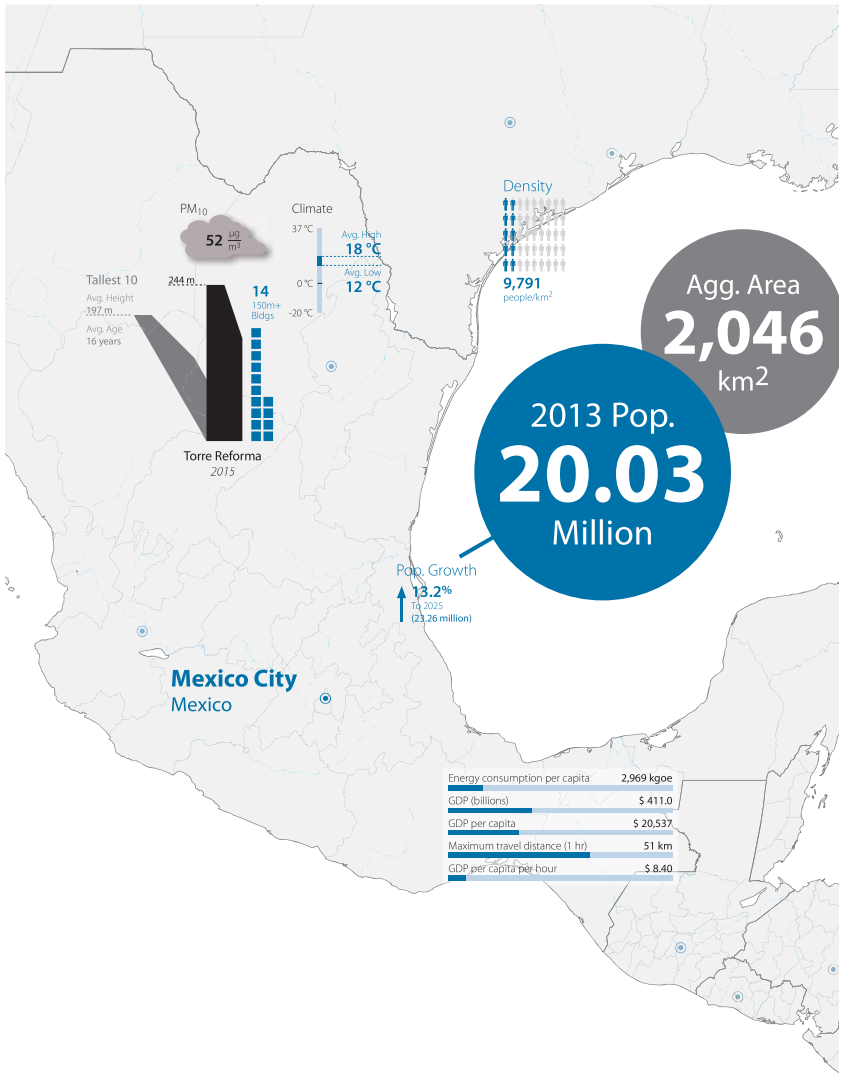
MEXICO CITY



OVERALL SCORE 48.4%

OVERALL RANK 17th

ECONOMIC

Economic Stability	58%	9th
Wealth	36%	11th
Value of Money	63%	13th

SOCIAL

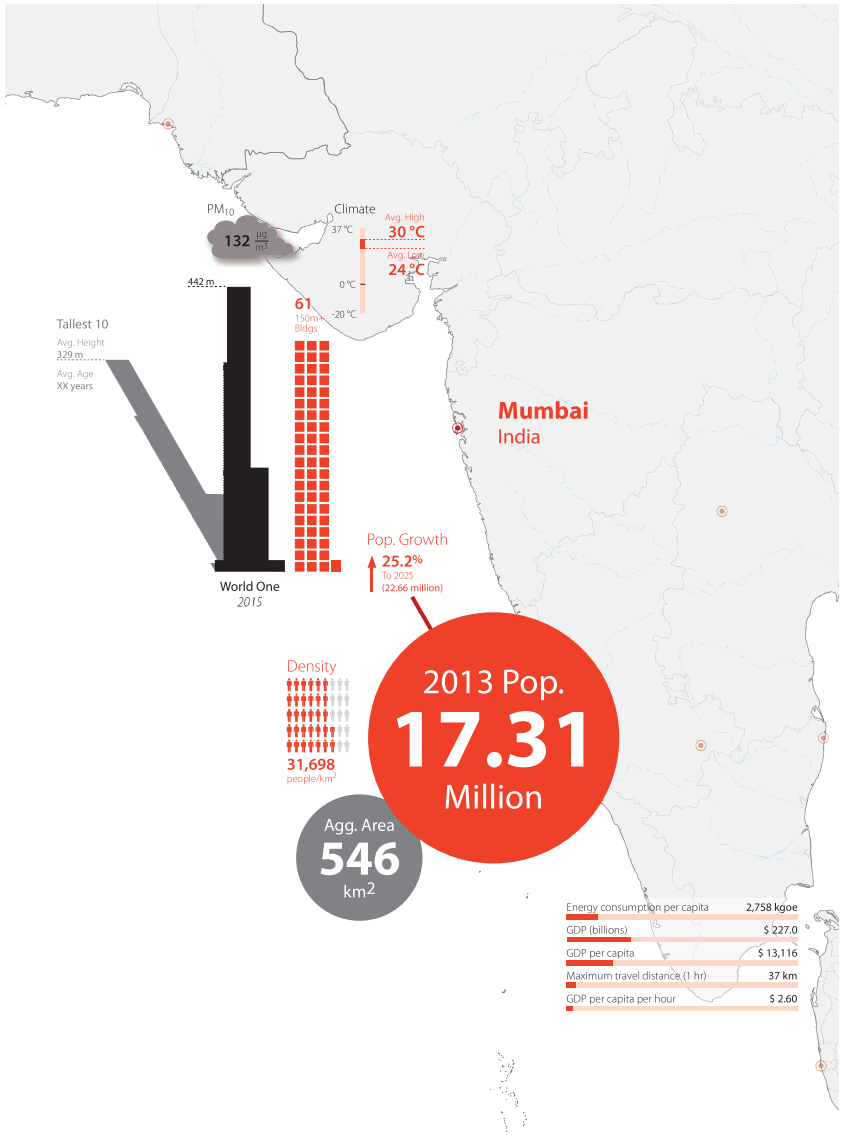
Health	52%	14th
Safety	52%	16th
Welfare	32%	17th

ENVIRONMENTAL

Natural Resources	44%	11th
Ecology and Climate	54%	8th
Transportation	57%	8th
Pollution	56%	16th
Construction and Settlement	53%	9th
Food	52%	19th
Energy and Technology	40%	13th

CAITLIN MEHTA / JEFF PETRICK

MUMBAI



OVERALL SCORE 43.4%

OVERALL RANK 18th

ECONOMIC

Economic Stability	56%	10th
Wealth	27%	18th
Value of Money	20%	20th

SOCIAL

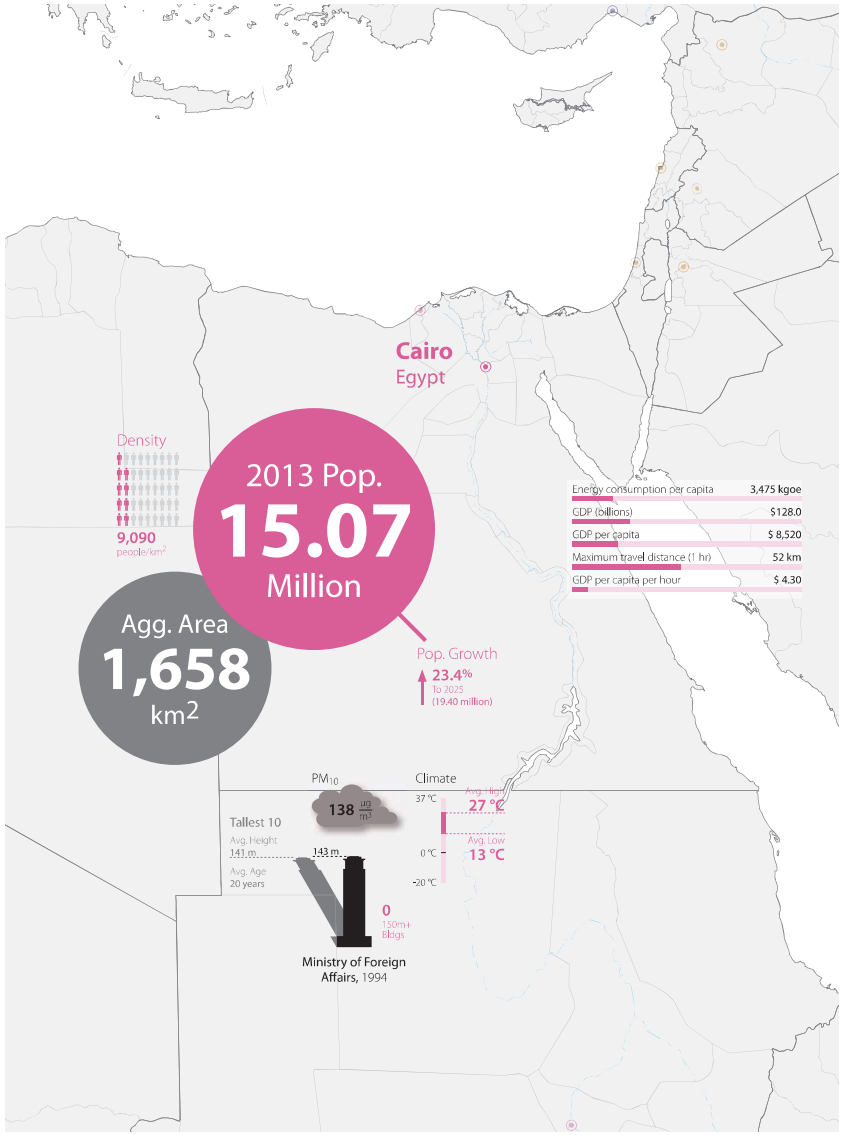
Health	46%	18th
Safety	79%	3rd
Welfare	31%	18th

ENVIRONMENTAL

Natural Resources	44%	13th
Ecology and Climate	55%	9th
Transportation	40%	20th
Pollution	46%	20th
Construction and Settlement	48%	15th
Food	43%	20th
Energy and Technology	35%	16th

CAITLIN MEHTA / JEFF PETRICK

CAIRO



OVERALL SCORE 42.4%

OVERALL RANK 19th

ECONOMIC

Economic Stability	51%	16th
Wealth	22%	20th
Value of Money	39%	19th

SOCIAL

Health	46%	17th
Safety	73%	9th
Welfare	23%	20th

ENVIRONMENTAL

Natural Resources	46%	6th
Ecology and Climate	43%	18th
Transportation	54%	12th
Pollution	46%	19th
Construction and Settlement	50%	11th
Food	56%	18th
Energy and Technology	27%	19th

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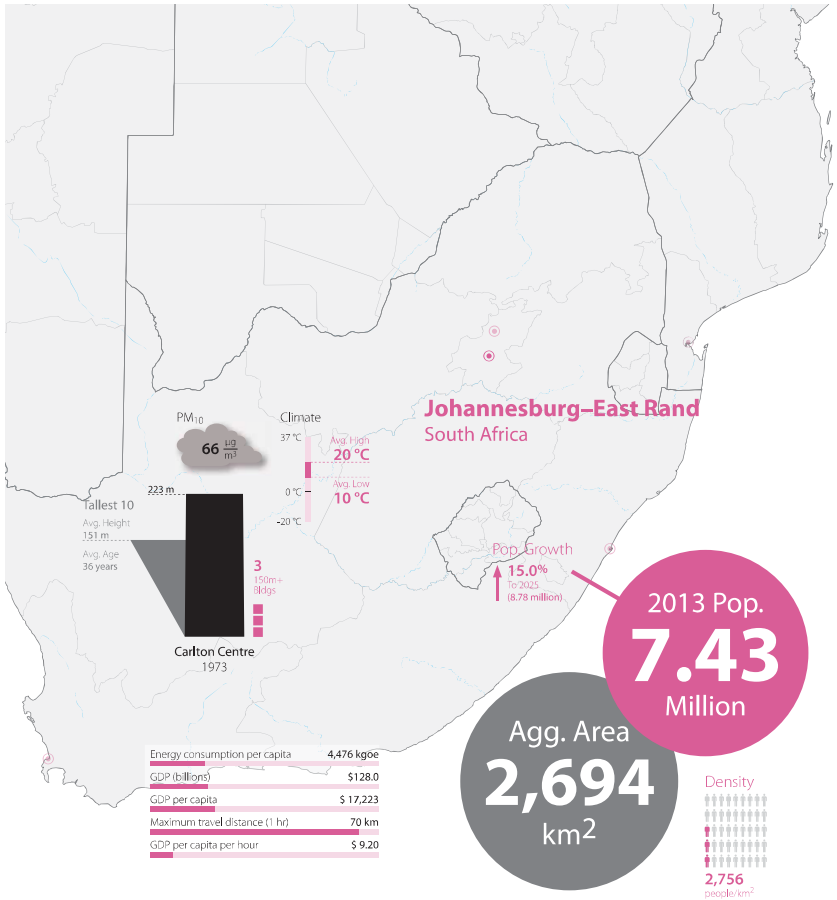
JOHANNESBURG



OVERALL SCORE 39.4%

OVERALL RANK 20th

ECONOMIC

Economic Stability	44%	20th
Wealth	29%	17th
Value of Money	56%	15th

SOCIAL

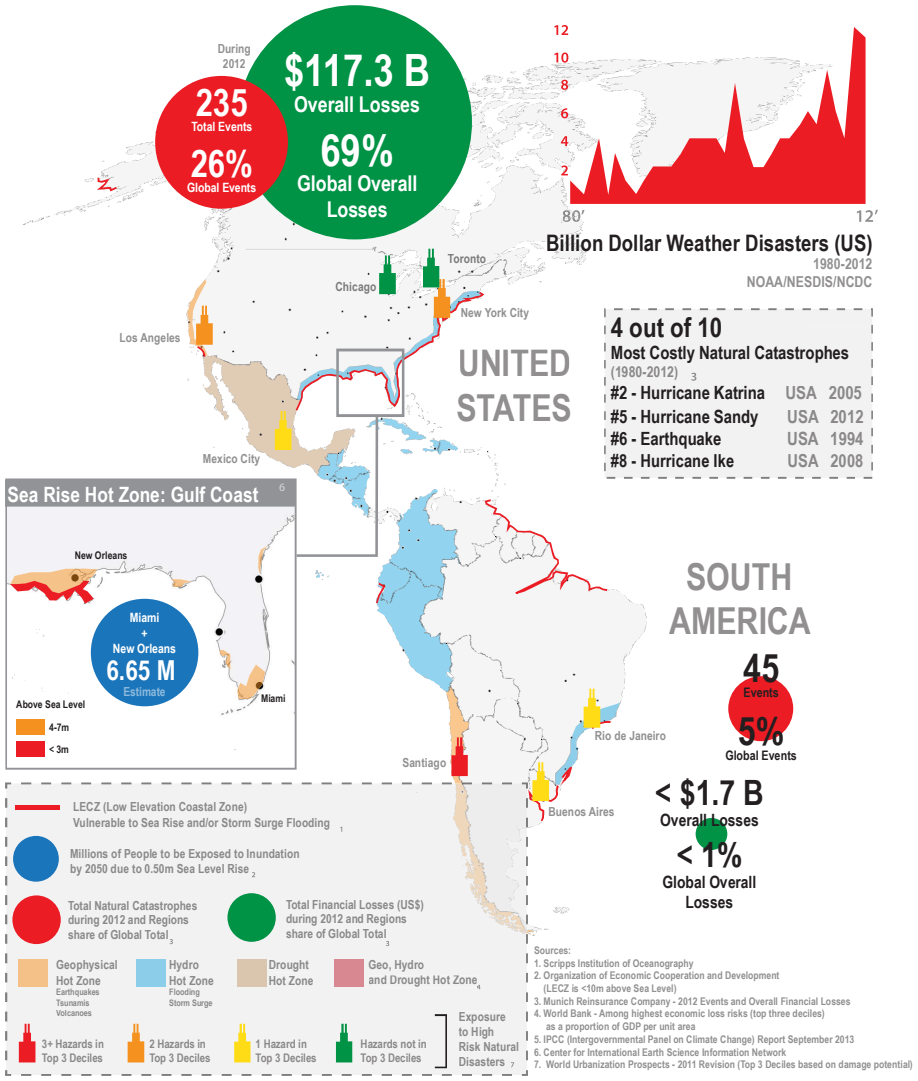
Health	26%	20th
Safety	5%	20th
Welfare	29%	19th

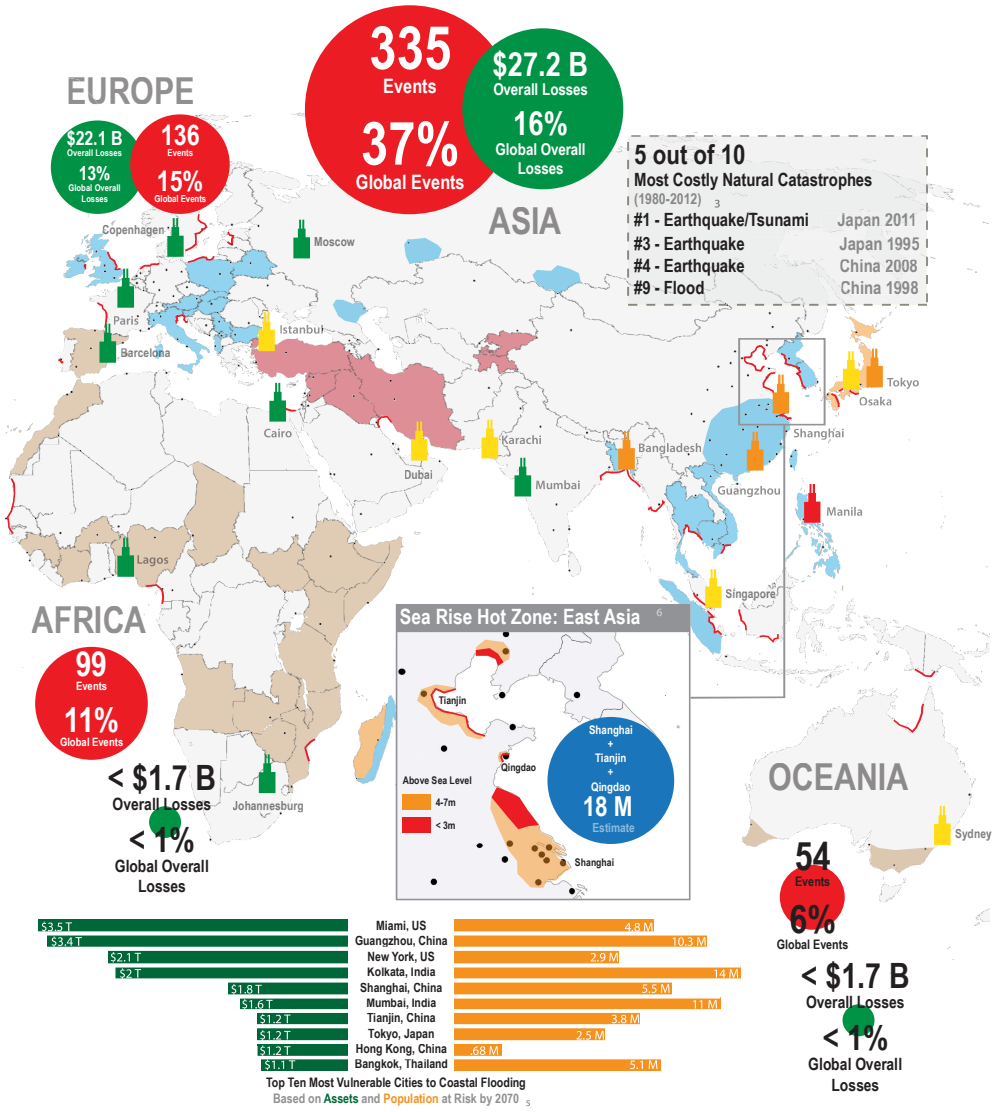
ENVIRONMENTAL

Natural Resources	56%	2nd
Ecology and Climate	55%	9th
Transportation	52%	14th
Pollution	65%	11th
Construction and Settlement	54%	8th
Food	62%	15th
Energy and Technology	28%	18th

CAITLIN MEHTA / JEFF PETRICK

REGIONAL CLIMATE STRESSES





NICK CALDWELL

SOAR OR SPRAWL

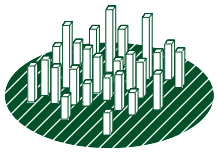
One of the biggest debates in terms of sustainability is the question of building horizontally or vertically, and the effect this has on density of the city. Theoretically, a denser city would be more sustainable, provided the city has the necessary infrastructure to support a large quantity of people living within a certain area. The cities displayed below are the most extreme cases within the sample study in terms of land area, number of tall buildings, built area, and population density.

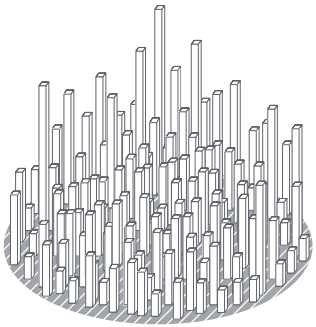
Smaller number of buildings, smaller land area growth

Santiago
2 tall buildings
10 km² of growth
67% average built area

Copenhagen
0 tall buildings
186 km² of growth
47% average built area

Smaller number of buildings, larger land area growth



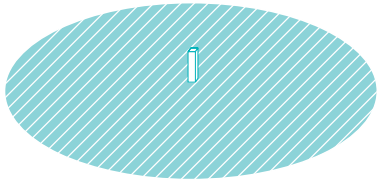


Mumbai
25 tall buildings
412 km² of growth
50% average built area

Mumbai has the highest population density of the twenty cities studied

Dubai
144 tall buildings
1,230 km² of growth
55% average built area

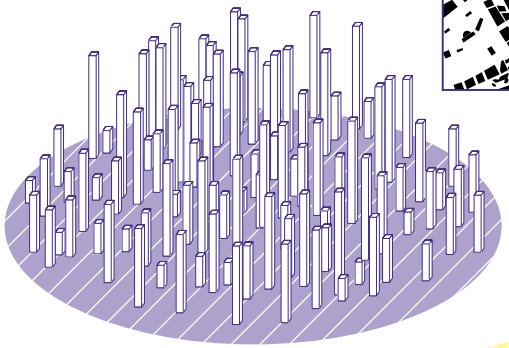
Larger number of buildings, smaller land area growth



Paris
1 tall building
1,389 km² of growth
50% average built area

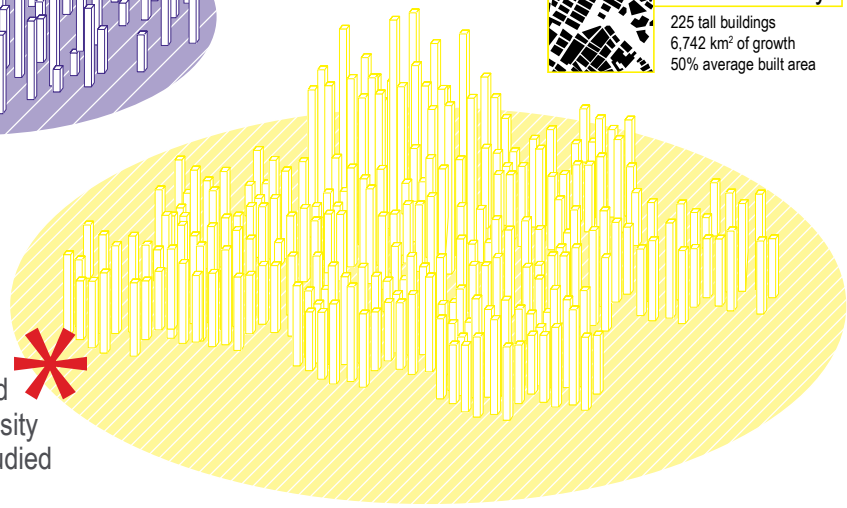
Johannesburg
0 tall buildings
1,394 km² of growth
45% average built area

Larger number of buildings, larger land area growth



Shanghai
117 tall buildings
2,948 km² of growth
33% average built area

New York City
225 tall buildings
6,742 km² of growth
50% average built area



New York has the third lowest population density of the twenty cities studied

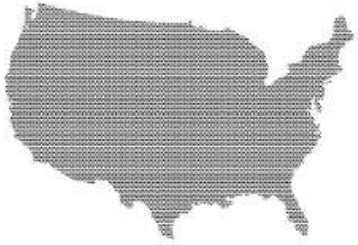
CAITLIN MEHTA

LITERACY

literacy rates in countries versus cities

KEY

Children living in a rural environment are **TWICE** as likely to be out of school than those from urban environments.
-UNESCO

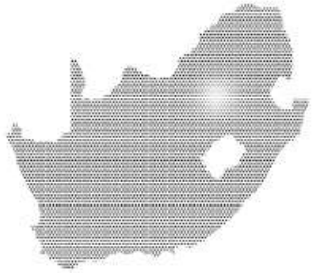


United States 99%

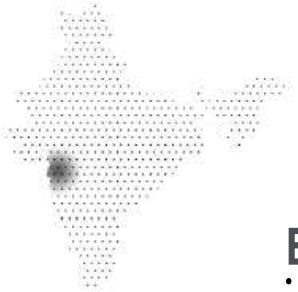
Shanghai 97%
China 95%

Mexico City 90%
Mexico 93%

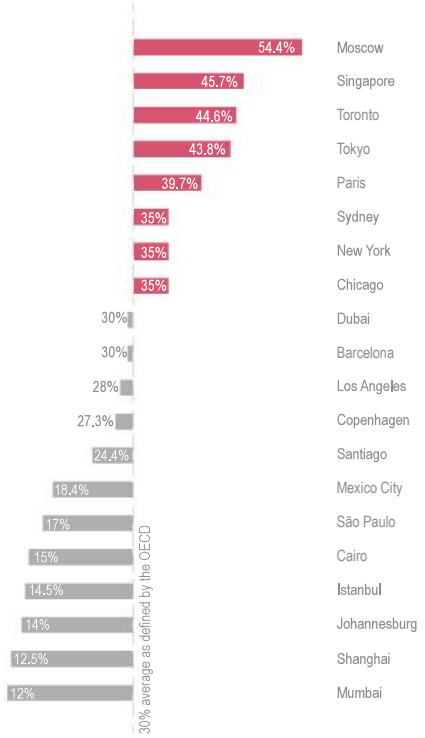
São Paulo 97%
Brazil 90%



Johannesburg 73.5%
South Africa 93%



Mumbai 88%
India 63%



EDUCATIONAL ATTAINMENT

percent of the population whom have attained a tertiary degree

Education is the often times thought of as the foundation of a strong society. It is associated with improving all aspects of life. Having the proper basis to prepare citizens for the labor force is an important driver towards the welfare of a society and is vital to long-term sustainability. According the United States department of Health and Human Services, a solid education "shapes the personal development and prospects," of the individual and is essential the "economic and social progress of a nation (America's Children in Brief: Key National Indicators of Well-Being 2012)." Having the basic skills to read and write, alone gives people a gateway to provide from themselves. Access to quality education and supplementary libraries begins to shape a society by providing the skills needed to boost an economy and inform people on health and other dire issues. With higher educational attainment, citizens can be exposed to more opportunities, which leads to economic growth of a society.

STUDENT PERFORMANCE

scientific documents published in 2012 in science direct from local universities

Paris
11,194

New York City
9,350

São Paulo
3,916

Sydney
3,800

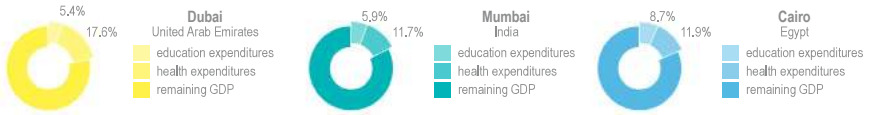
Johannesburg
511

Dubai
68

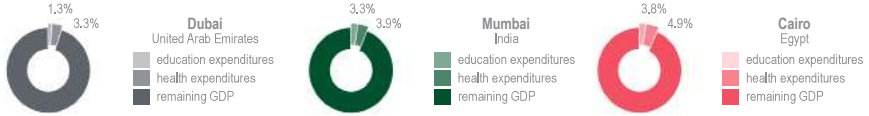
PUBLIC SPENDING

% of GDP spent on health and education

HIGHEST SPENDERS



LOWEST SPENDERS



WORK + VACATION

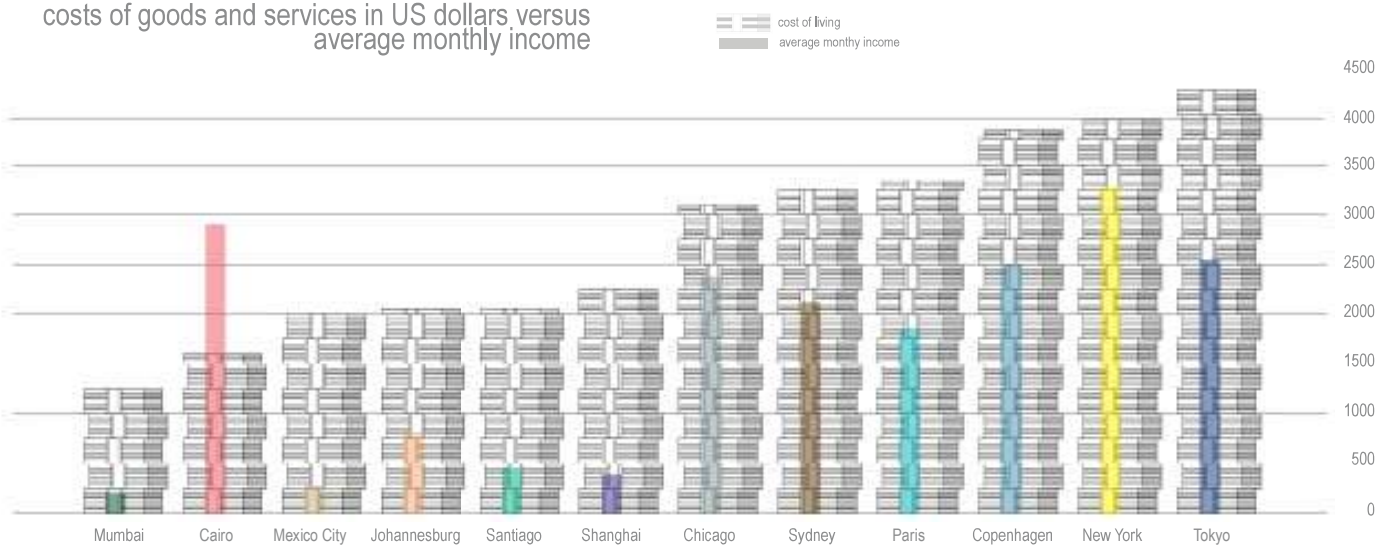
number of working hours as a percentage of total working hours in a year versus paid vacation days per year

BEST BALANCE

WORST BALANCE

COST OF LIVING

costs of goods and services in US dollars versus average monthly income



The average person works

1,776 hours a year and devotes **62%** of the day, to personal care and leisure

-OECD

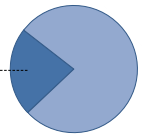
A healthy balance between work and family, in terms of quality of life, is another essential aspect to the over-all well-being of a society. According the OECD, when a good balance between work and family cannot be achieved, the welfare of a country and the opportunity for the country to develop are directly affected (Better Life Index). The cities that tend to thrive often have something to offer the family. The average size of a family varies between cities depending on the amount of time citizens spend working and on a city's cost of living. Without the proper economic security and free-time available, people will chose to have larger or smaller families.

COST + AFFORDABILITY

= 10 WORK HOURS

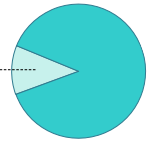
BEST LEAST MONTHLY SPENDING ON GROCERIES

MOSCOW
13 WORK HOURS TO AFFORD MONTHLY GROCERIES*



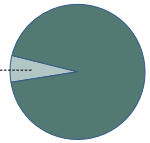
29% OF ANNUAL INCOME SPENT ON FOOD

PARIS
15 WORK HOURS TO AFFORD MONTHLY GROCERIES*



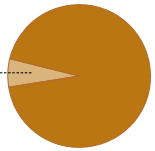
13% OF ANNUAL INCOME SPENT ON FOOD

CHICAGO
16 WORK HOURS TO AFFORD MONTHLY GROCERIES*



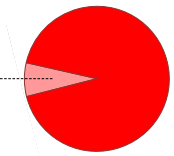
7% OF ANNUAL INCOME SPENT ON FOOD

LOS ANGELES
16 WORK HOURS TO AFFORD MONTHLY GROCERIES*



7% OF ANNUAL INCOME SPENT ON FOOD

SINGAPORE
17 WORK HOURS TO AFFORD MONTHLY GROCERIES*



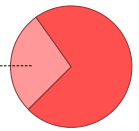
8% OF ANNUAL INCOME SPENT ON FOOD

WORST MOST MONTHLY SPENDING ON GROCERIES

MUMBAI
70 WORK HOURS TO AFFORD MONTHLY GROCERIES*

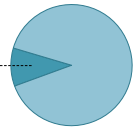
36% OF ANNUAL INCOME SPENT ON FOOD

CAIRO
69 WORK HOURS TO AFFORD MONTHLY GROCERIES*



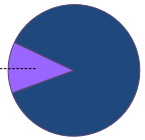
38% OF ANNUAL INCOME SPENT ON FOOD

COPENHAGEN
47 WORK HOURS TO AFFORD MONTHLY GROCERIES*



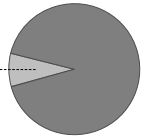
11% OF ANNUAL INCOME SPENT ON FOOD

TOKYO
46 WORK HOURS TO AFFORD MONTHLY GROCERIES*



14% OF ANNUAL INCOME SPENT ON FOOD

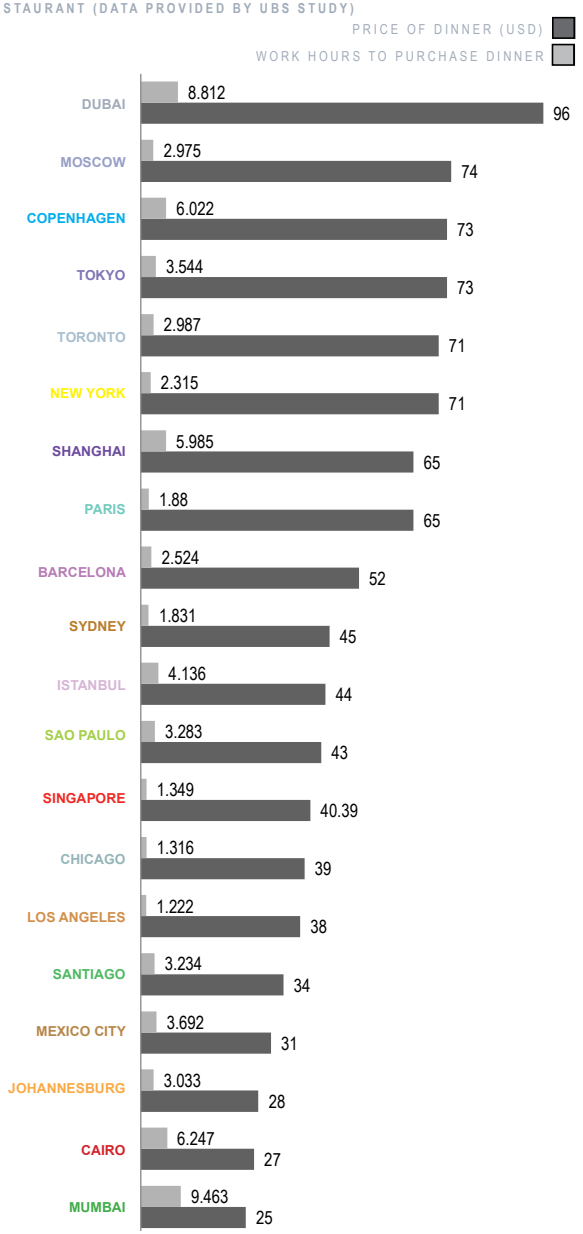
DUBAI
45 WORK HOURS TO AFFORD MONTHLY GROCERIES*



9% OF ANNUAL INCOME SPENT ON FOOD

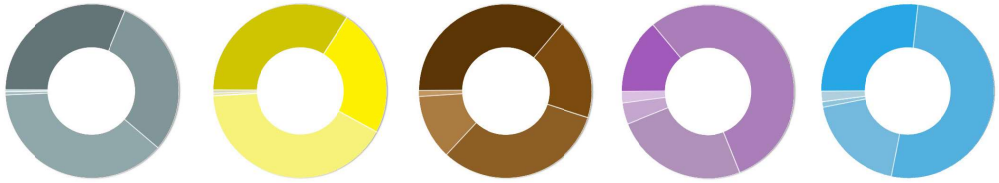
DINING AFFORDABILITY

COST AND WORK HOURS NEEDED TO AFFORD DINNER AT A GOOD RESTAURANT (DATA PROVIDED BY UBS STUDY)



LILIA GUERRERO

QUALITY + CONSUMPTION



CHICAGO
BEEF: **39.3 kg**
PORK: **38.2 kg**
POULTRY: **47.8 kg**
MUTTON + GOAT: **0.7 kg**
OTHER: **0.2 kg**

126.2
TOTAL MEAT CONSUMPTION PER CAPITA (KG/PER CAPITA/ PER YEAR)

NEW YORK
BEEF: **42.1 kg**
PORK: **30.3 kg**
POULTRY: **51.8 kg**
MUTTON + GOAT: **0.5 kg**
OTHER: **0.7 kg**

125.4
TOTAL MEAT CONSUMPTION PER CAPITA (KG/PER CAPITA/ PER YEAR)

SYDNEY
BEEF: **43.5 kg**
PORK: **23 kg**
POULTRY: **39.3 kg**
MUTTON + GOAT: **14.3 kg**
OTHER: **1.1 kg**

121.2
TOTAL MEAT CONSUMPTION PER CAPITA (KG/PER CAPITA/ PER YEAR)

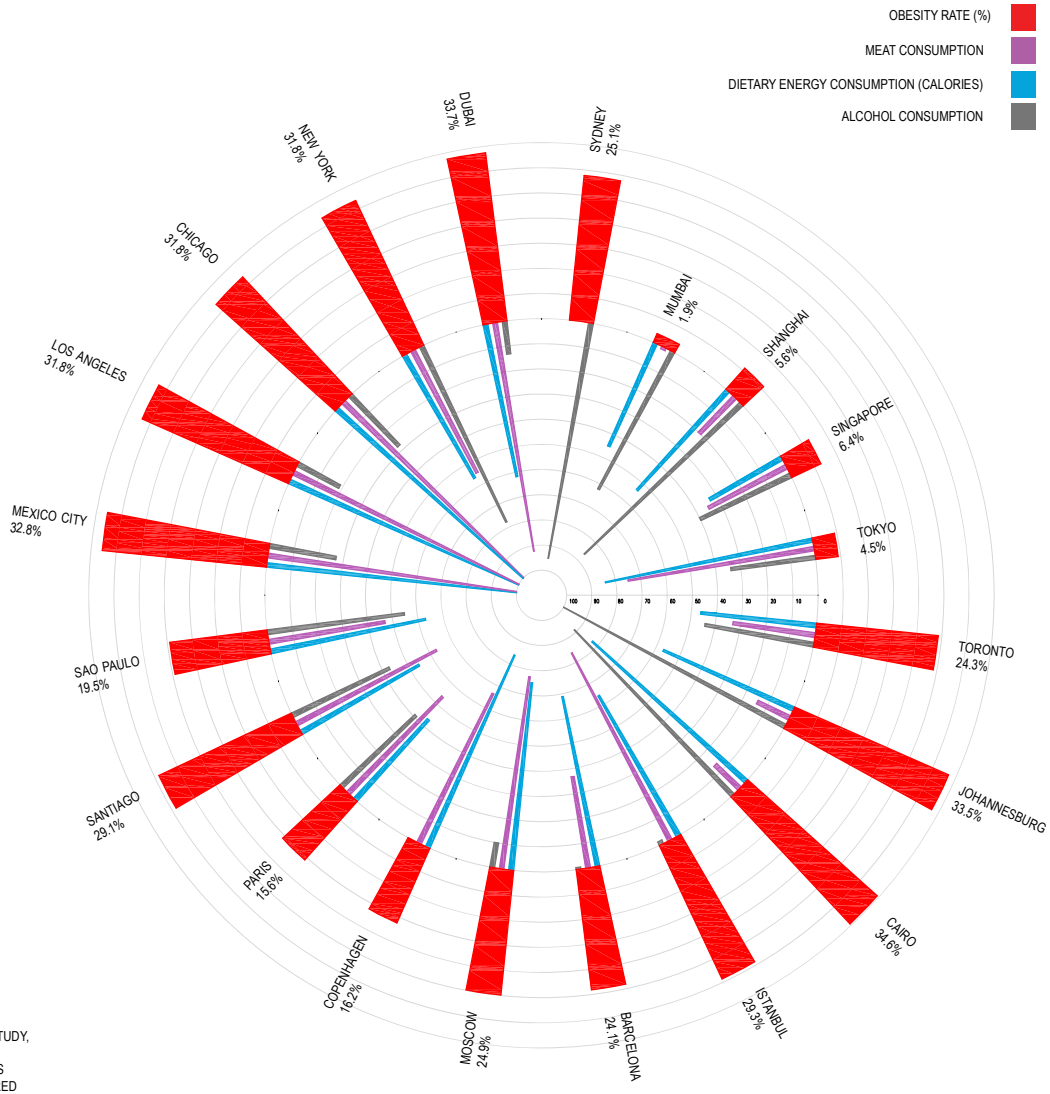
BARCELONA
BEEF: **14.9 kg**
PORK: **60.9 kg**
POULTRY: **27.3 kg**
MUTTON + GOAT: **4.5 kg**
OTHER: **2.5 kg**

110.2
TOTAL MEAT CONSUMPTION PER CAPITA (KG/PER CAPITA/ PER YEAR)

COPENHAGEN
BEEF: **26.6 kg**
PORK: **49.5 kg**
POULTRY: **18.2 kg**
MUTTON + GOAT: **1.2 kg**
OTHER: **2.3 kg**

97.8
TOTAL MEAT CONSUMPTION PER CAPITA (KG/PER CAPITA/ PER YEAR)

OBESITY + CONSUMPTION



UNITED STATES

HEIGHT: 176.4 cm
WAIST: 99.4 cm
BMI: 29

FRANCE

HEIGHT: 174.4 cm
WAIST: 92.3 cm
BMI: 25.55

NETHERLANDS

HEIGHT: 183.3 cm
WAIST: 91 cm
BMI: 25.2

JAPAN

HEIGHT: 171.4 cm
WAIST: 82.9 cm
BMI: 23.7

ACCORDING TO THE STUDY, ONLY THE JAPANESE MAN HAS A BODY MASS INDEX (BMI) CONSIDERED "HEALTHY"

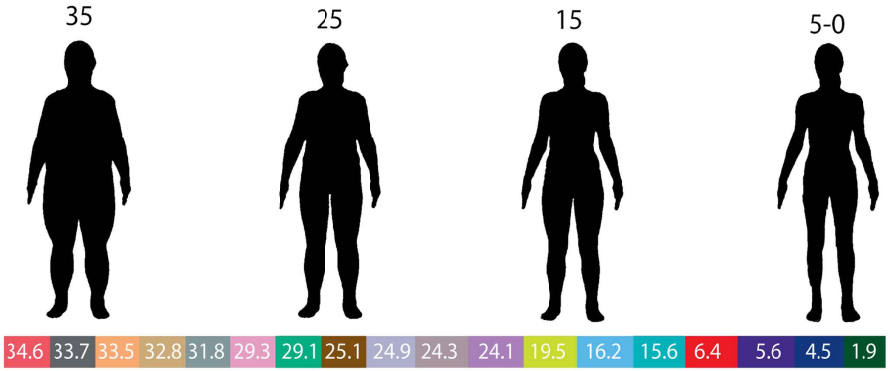
AVERAGE MALE BODY TYPE

CENTER FOR DISEASE CONTROL 2012

LILIA GUERRERO

HEALTH

Obesity rate and people living with HIV/AIDS

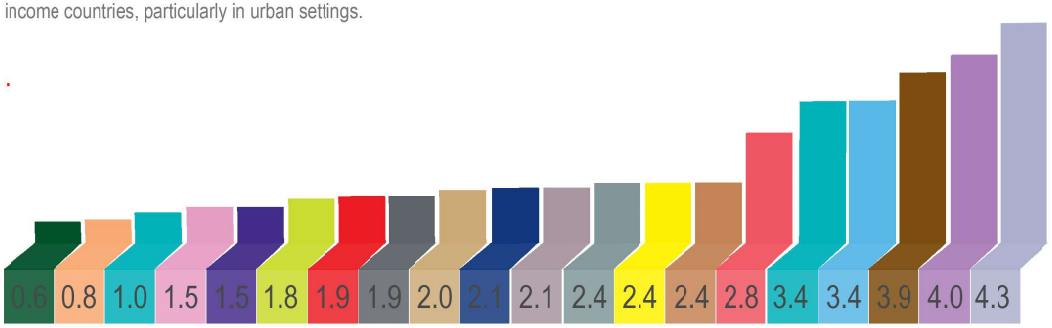


OBESITY RATES FOR COUNTRIES
(BMI > 30)

In the rankings shown above, **India** came in with the lowest obesity rate and **Egypt** had the highest followed by **UAE**

Accorcing to the World Health Organization, overweight and obesity are defined as abnormal or excessive fat accumulation that presents a risk to health. A crude population measure of obesity is the body mass index (BMI), a person's weight (in kilograms) divided by the square of his or her height (in metres). A person with a BMI of 30 or more is generally considered obese. A person with a BMI equal to or more than 25 is considered overweight.

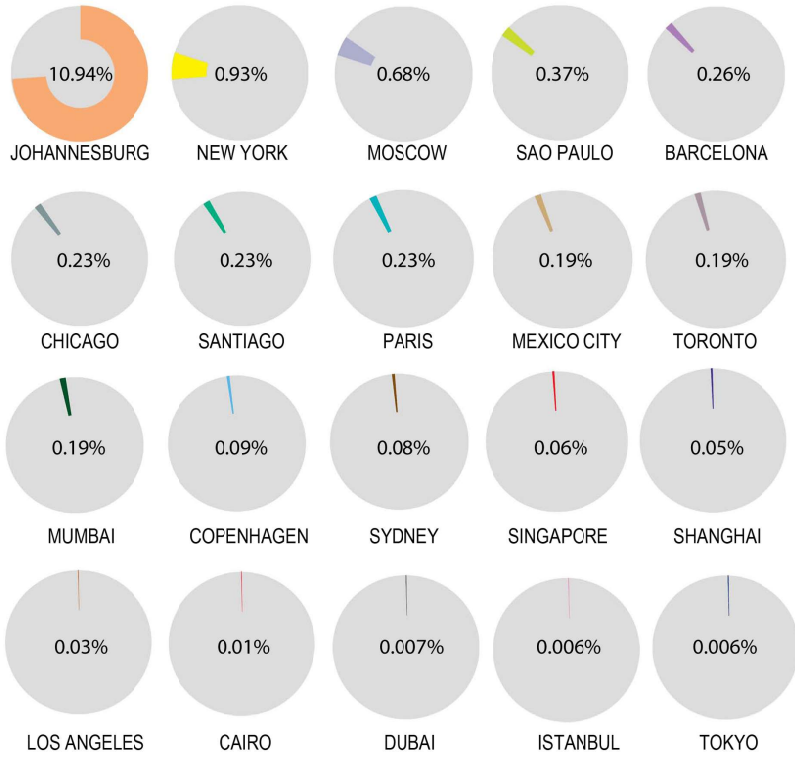
Overweight and obesity are major risk factors for a number of chronic diseases, including diabetes, cardiovascular diseases and cancer. Once considered a problem only in high income countries, overweight and obesity are now dramatically on the rise in low- and middle-income countries, particularly in urban settings.



THE NUMBER OF PHYSICIANS AVAILABLE FOR EVERY 1000 PEOPLE
These are the numbers from the WORLD HEALTH ORGANIZATION on the country level

Globally, 34.0 million [31.4–35.9 million] people were living with HIV at the end of 2011.Sub-Saharan Africa remains most severely affected, with nearly 1 in every 20 adults (4.9%) living with HIV and accounting for 69% of the people living with HIV worldwide.

10.94% of the population in **South Africa** has HIV/AIDS. This is almost 10 times more people compared to other countries in the world.

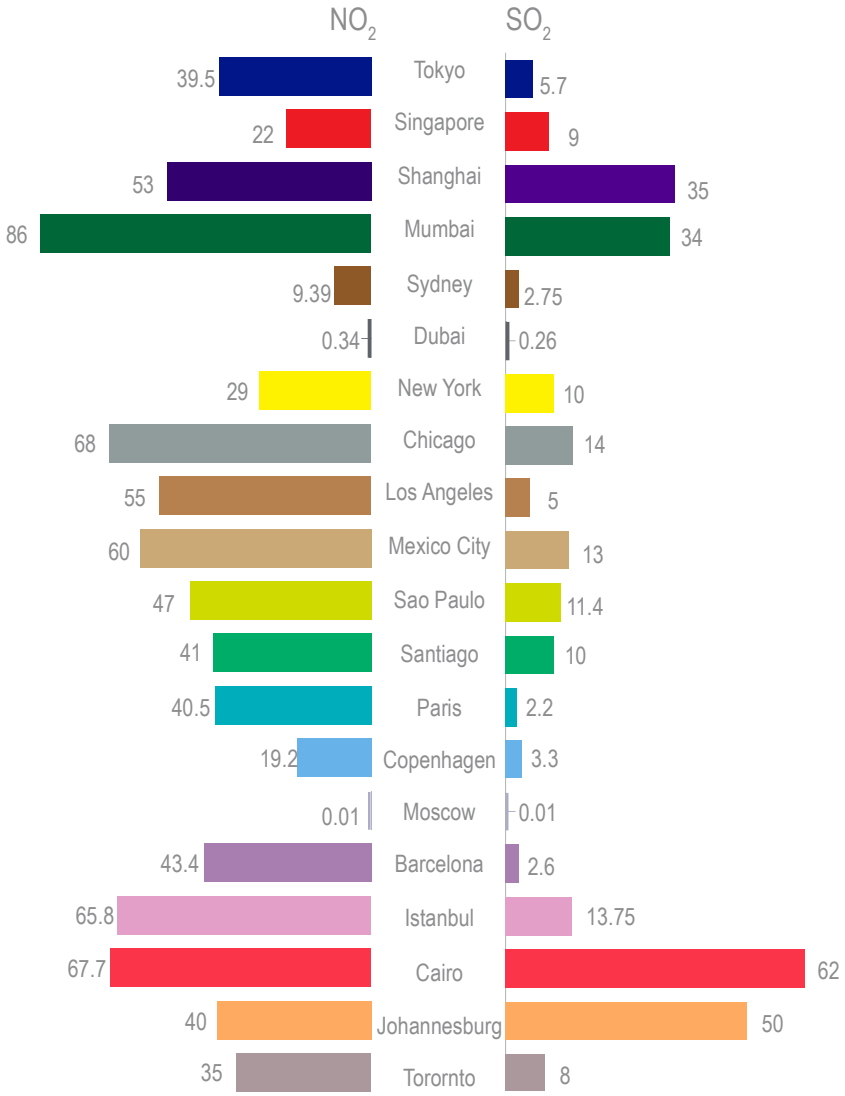


PERCENTAGE OF THE POPULATION LIVING WITH HIV/AIDS
(COUNTRY LEVEL)

Irena Aexandrova

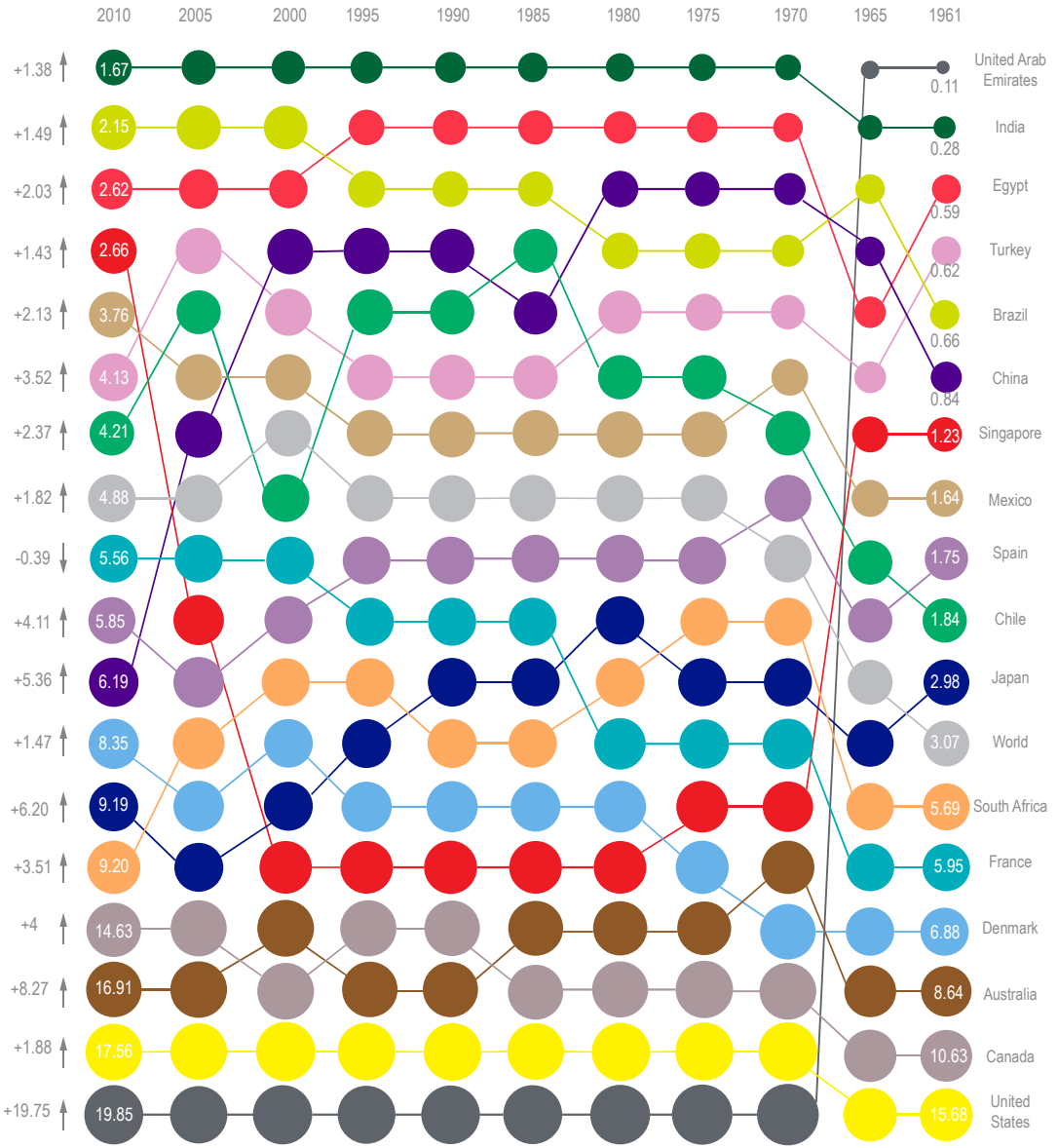
NO_2 and SO_2

Concentrations in annual mg/m^3



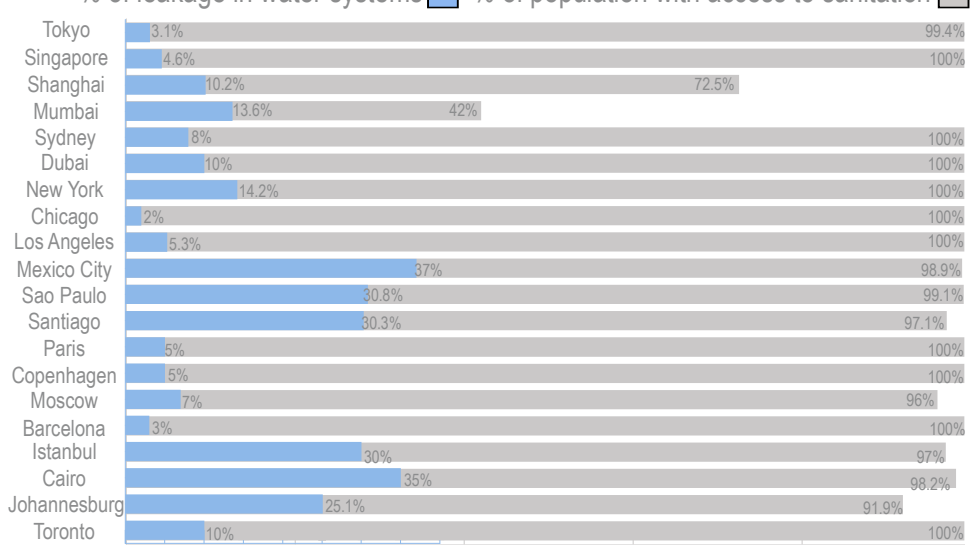
CO_2 emissions

Past 50 years progression in tons/ capita



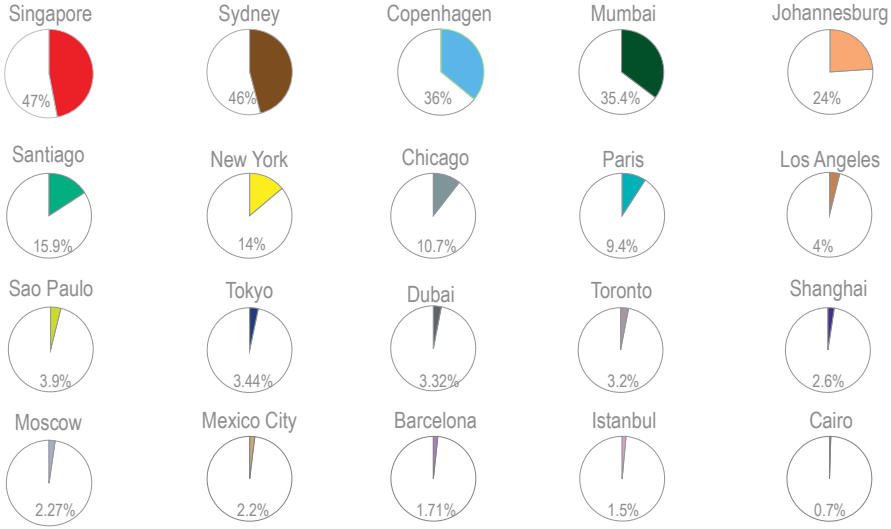
SARAH HARVEY

LEAKAGE AND SANITATION



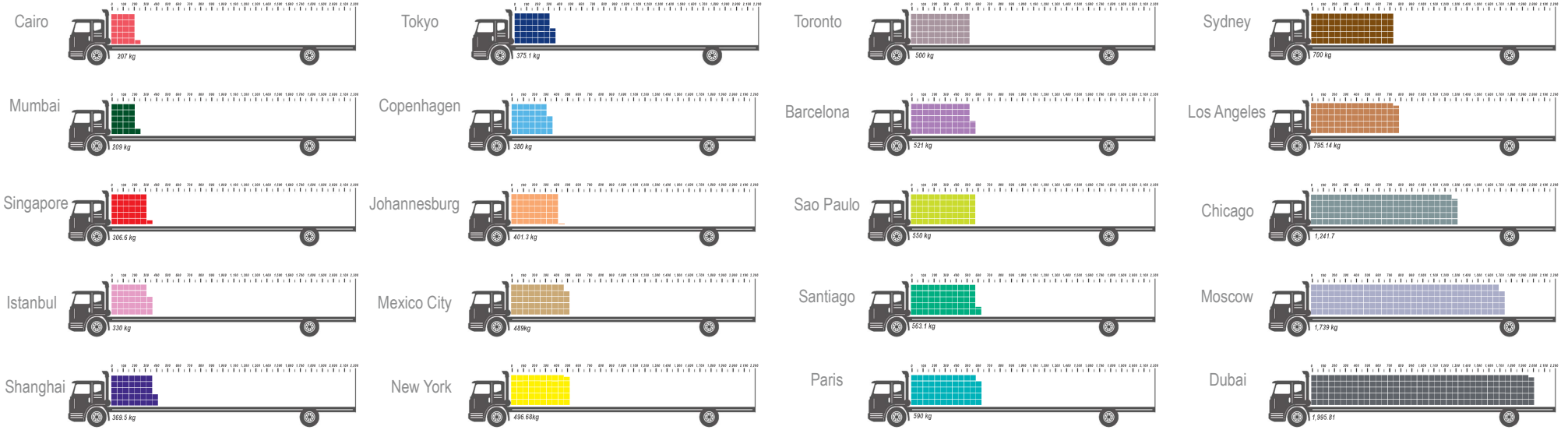
GREEN SPACES

% of parks and green areas



WASTE

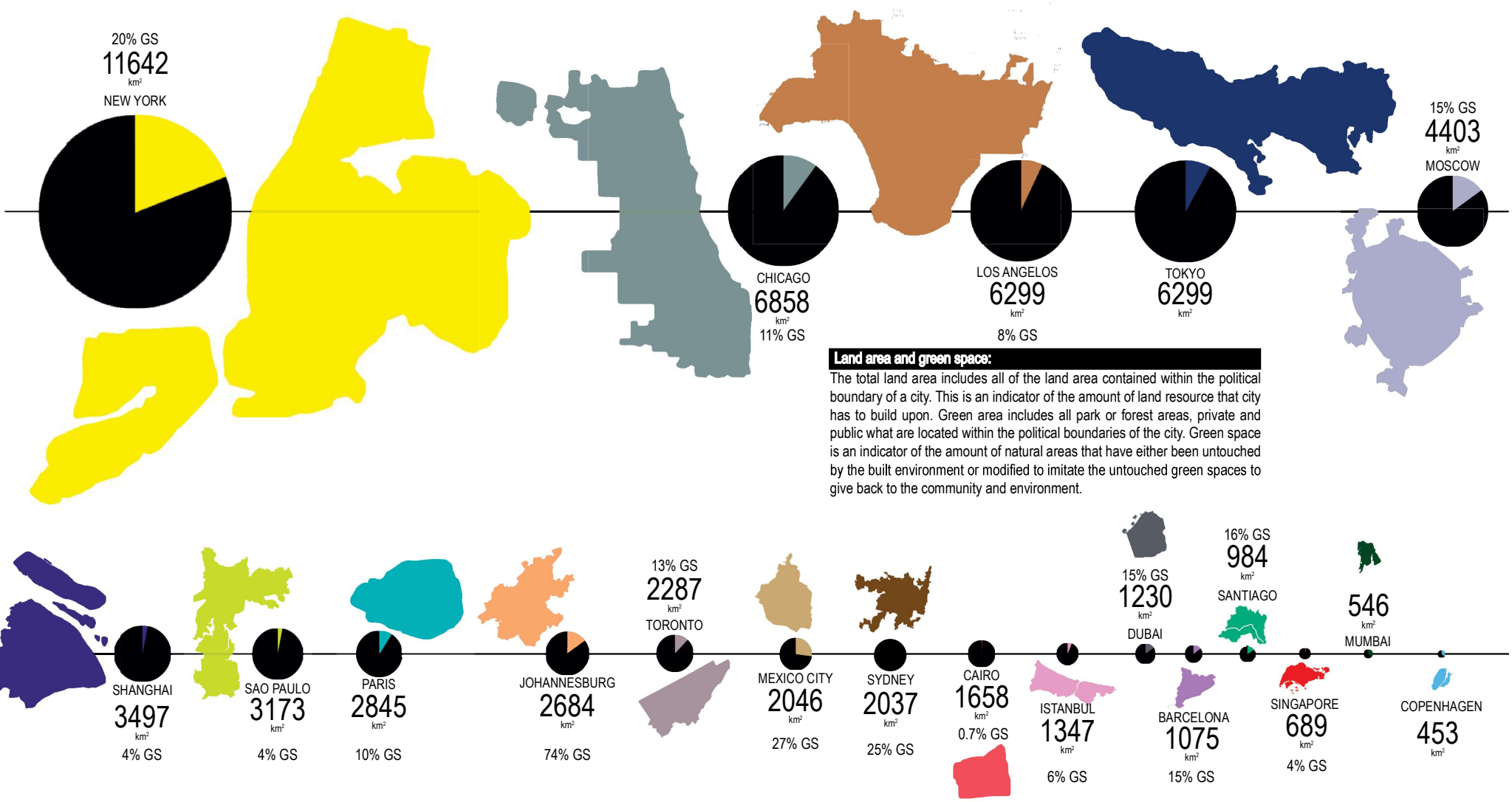
Kilograms of waste produced per person per year



SARAH HARVEY

LAND AND GREEN SPACE

Land: Total land ares in km2 and percentage of green space in city boundaries



Land area and green space:

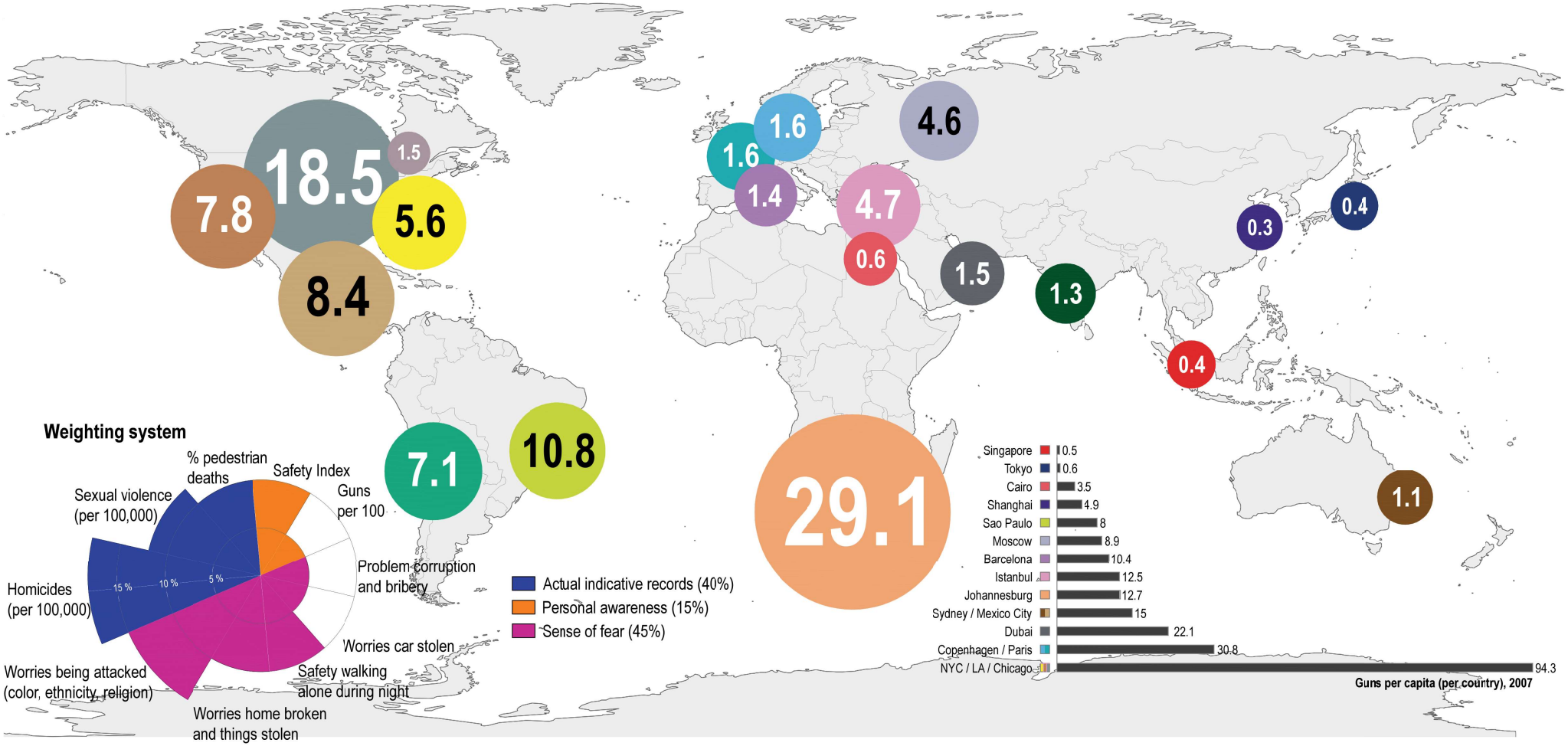
The total land area includes all of the land area contained within the political boundary of a city. This is an indicator of the amount of land resource that city has to build upon. Green area includes all park or forest areas, private and public what are located within the political boundaries of the city. Green space is an indicator of the amount of natural areas that have either been untouched by the built environment or modified to imitate the untouched green spaces to give back to the community and environment.

DIANE KONECKY

SAFETY

Safety explained graphically paying more attention to homicides per 100,000 (color bubbles), as it´s been considered the most relevant indicator within safety, having the biggest impact in the weighting system (18%). This system is also graphically explained below, and additionalts charts show other important information of every city in terms of safety.

	Top-five safest cities in terms of...					Unsafest
Sexual Violence	0.1	2.6	5.9	6.4	11.7	90.8
Worries being subject to physical attack	6.8	12.2	14.4	15.3	19.2	71.1
Worries home broken and things stolen	14.1	19.5	22.8	25	29.1	87.9
Safety walking alone during night	88.4	85.4	82.8	72.1	68.1	5.7



ANDRÉS GONZÁLEZ-MENESES

CONNECTIVITY

AIRPORT ACTIVITY AND REGIONAL ACCESS

TOP 5

JFK
KENNEDY INT'L AIRPORT
NEW YORK, USA
UA POPULATION: **20,140,000**
OF DEPARTING FLIGHTS: **3109**

CDG
DE GAULLE INT'L AIRPORT
PARIS, FRANCE
UA POPULATION: **11,096,583**
OF DEPARTING FLIGHTS: **2109**

LAX
LOS ANGELES INT'L AIRPORT
LOS ANGELES, USA
UA POPULATION: **14,080,801**
OF DEPARTING FLIGHTS: **1522**

HND
HANEDA INT'L AIRPORT
TOKYO, JAPAN
UA POPULATION: **38,196,677**
OF DEPARTING FLIGHTS: **1355**

ORD
O'HARE INT'L AIRPORT
CHICAGO, USA
UA POPULATION: **9,104,000**
OF DEPARTING FLIGHTS: **1312**

BOTTOM 5

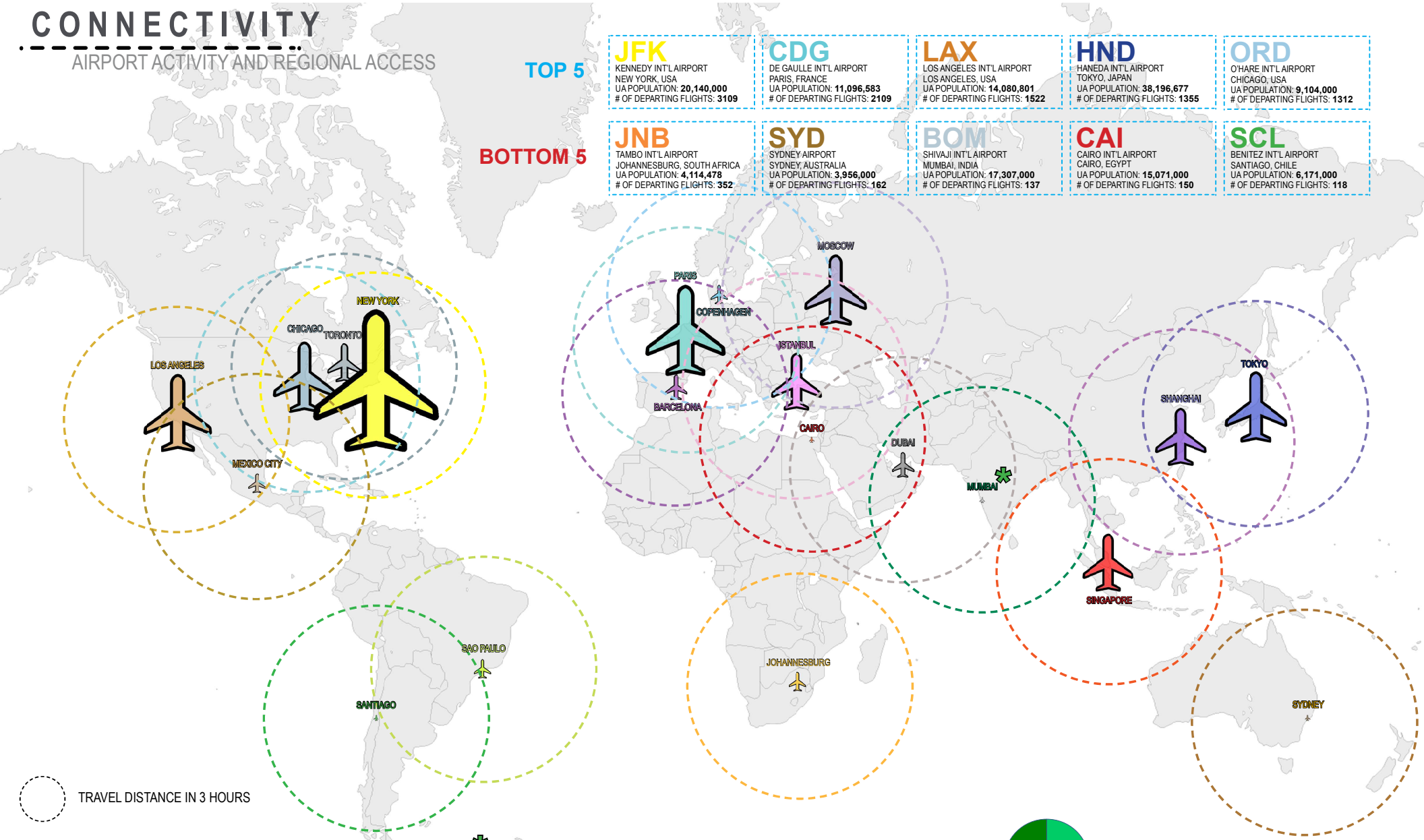
JNB
TAMBO INT'L AIRPORT
JOHANNESBURG, SOUTH AFRICA
UA POPULATION: **4,114,478**
OF DEPARTING FLIGHTS: **352**

SYD
SYDNEY AIRPORT
SYDNEY, AUSTRALIA
UA POPULATION: **3,956,000**
OF DEPARTING FLIGHTS: **162**

BOM
SHIVAJI INT'L AIRPORT
MUMBAI, INDIA
UA POPULATION: **17,307,000**
OF DEPARTING FLIGHTS: **137**

CAI
CAIRO INT'L AIRPORT
CAIRO, EGYPT
UA POPULATION: **15,071,000**
OF DEPARTING FLIGHTS: **150**

SCL
BENITEZ INT'L AIRPORT
SANTIAGO, CHILE
UA POPULATION: **6,171,000**
OF DEPARTING FLIGHTS: **118**

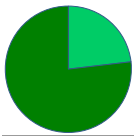


TRAVEL DISTANCE IN 3 HOURS

NUMBER OF INT'L AND DOMESTIC FLIGHTS DEPARTING AIRPORT

*2,167,000,000 NUMBER OF PEOPLE REACHED IN 3 HOURS, BY PLANE, FROM MUMBAI

OR



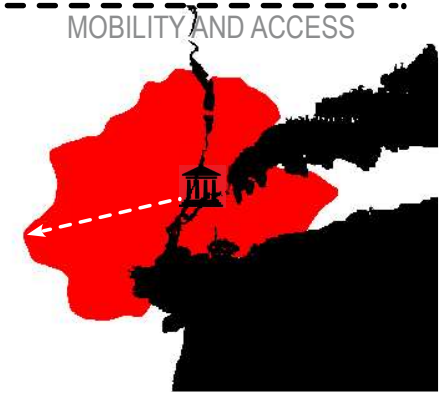
30% OF EARTH'S POPULATION

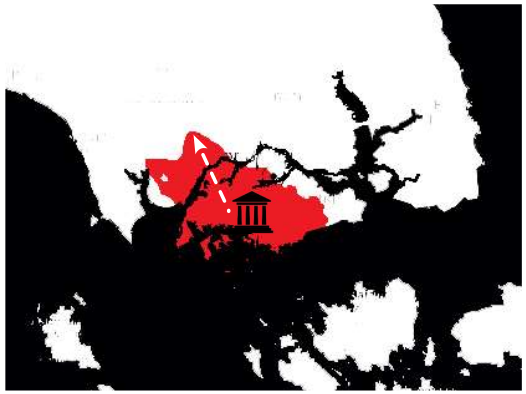
BENJAMIN WARD

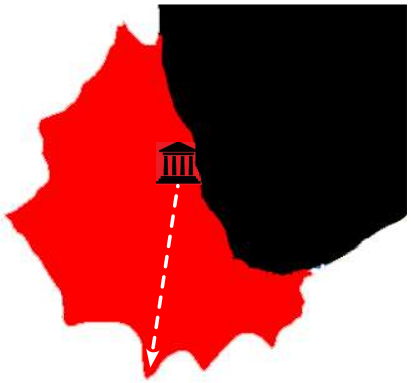
PRIVATE MOBILITY

MOBILITY AND ACCESS

AVERAGE DISTANCE BY CAR IN 60 MINUTES FROM CITY HALL







NEW YORK

11,642 KM² TOTAL LAND AREA

1,832 PEOPLE / KM² DENSITY

63km MAXIMUM TRAVEL DISTANCE (60 MIN)

36km AVERAGE TRAVEL DISTANCE (60 MIN)

SINGAPORE

8,547 KM² TOTAL LAND AREA

4,469 PEOPLE / KM² DENSITY

28km MAXIMUM TRAVEL DISTANCE (60 MIN)

26km AVERAGE TRAVEL DISTANCE (60 MIN)

DUBAI

1,230 KM² TOTAL LAND AREA

2,091 PEOPLE / KM² DENSITY

70km MAXIMUM TRAVEL DISTANCE (60 MIN)

50km AVERAGE TRAVEL DISTANCE (60 MIN)

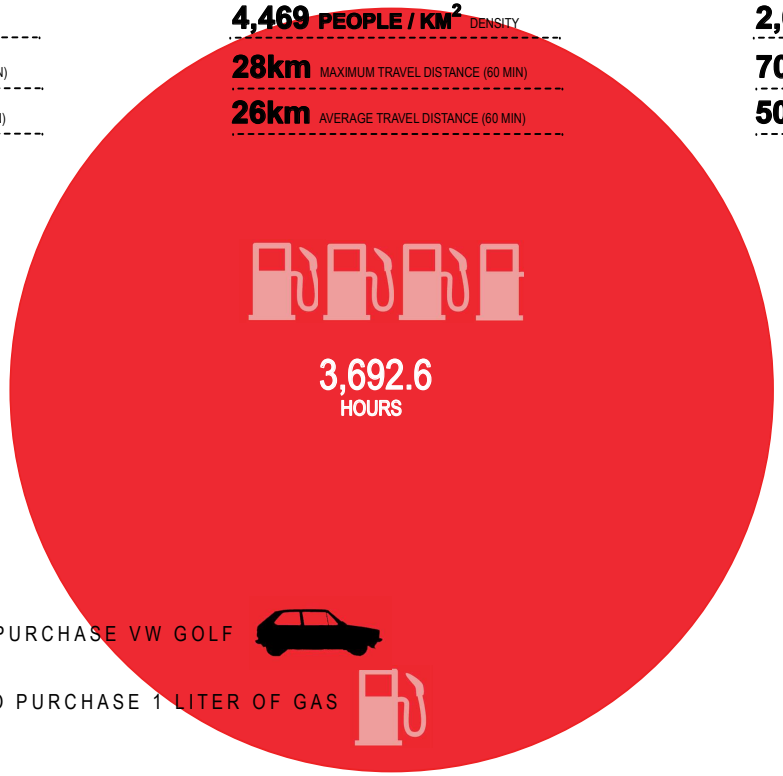
CHICAGO

6,858 KM² TOTAL LAND AREA

1,487 PEOPLE / KM² DENSITY

67km MAXIMUM TRAVEL DISTANCE (60 MIN)

62km AVERAGE TRAVEL DISTANCE (60 MIN)

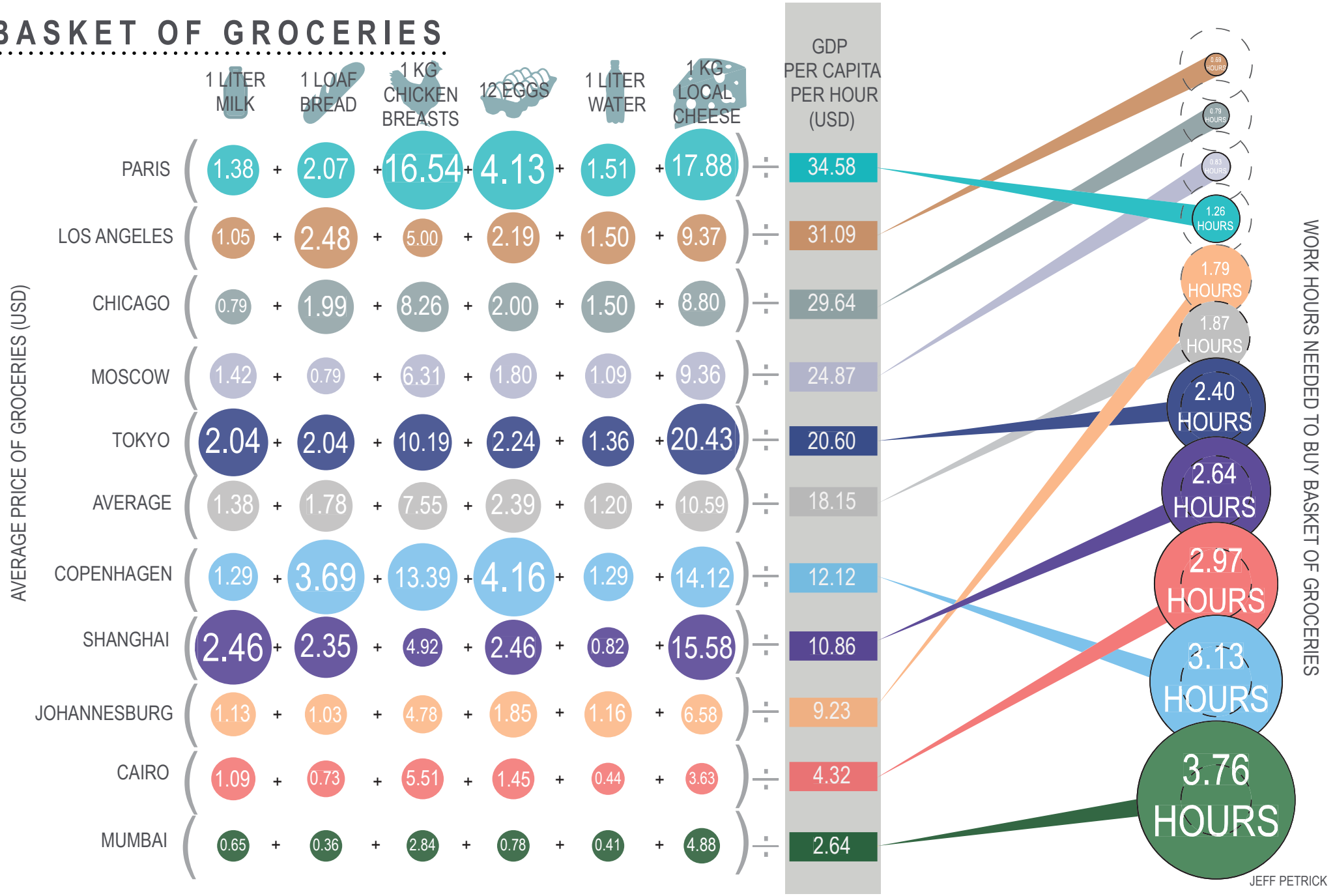


WORK HOURS NEEDED TO PURCHASE VW GOLF

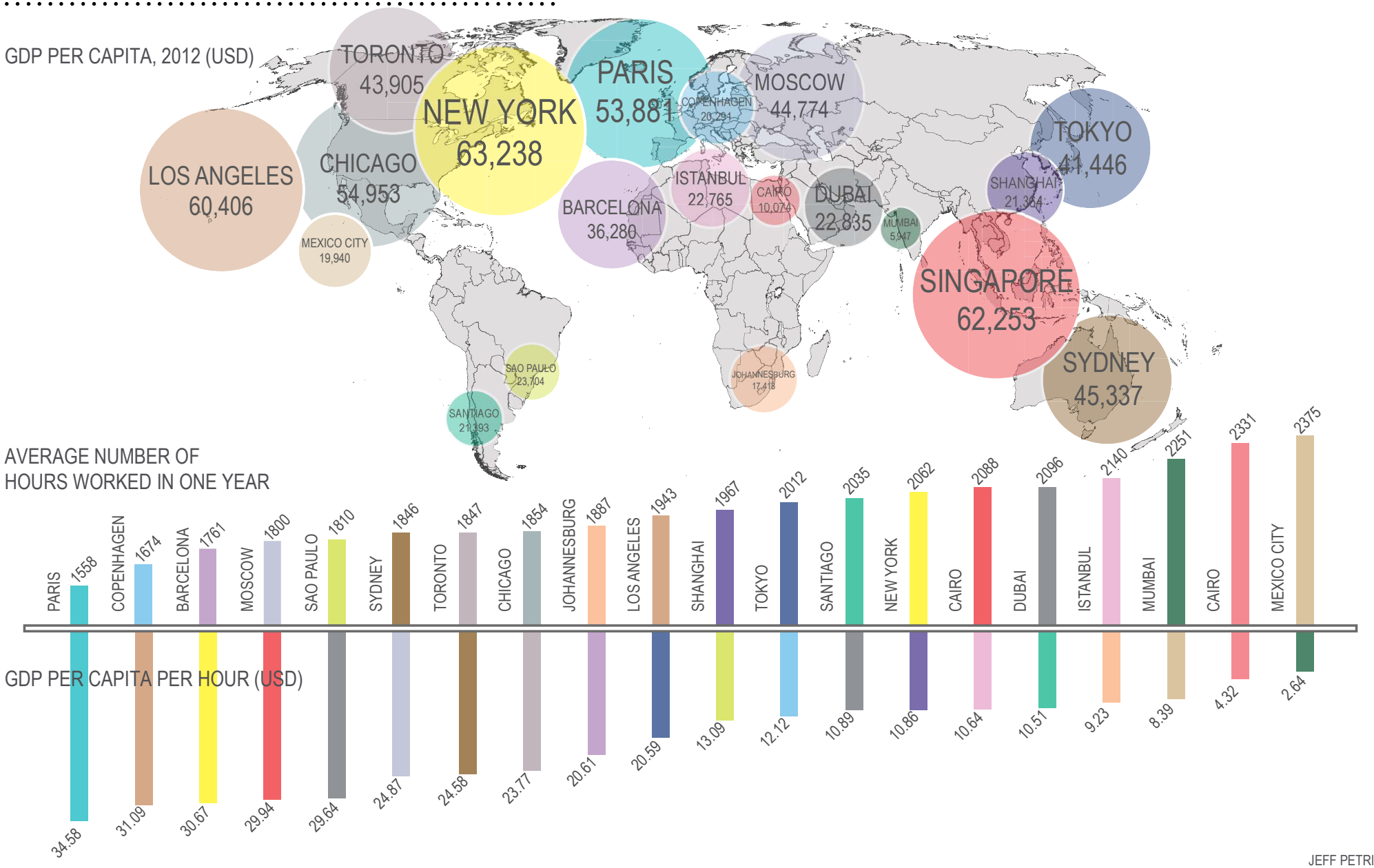
WORK MINUTES NEEDED TO PURCHASE 1 LITER OF GAS

BENJAMIN WARD

BASKET OF GROCERIES



GDP PER CAPITA ANALYSIS

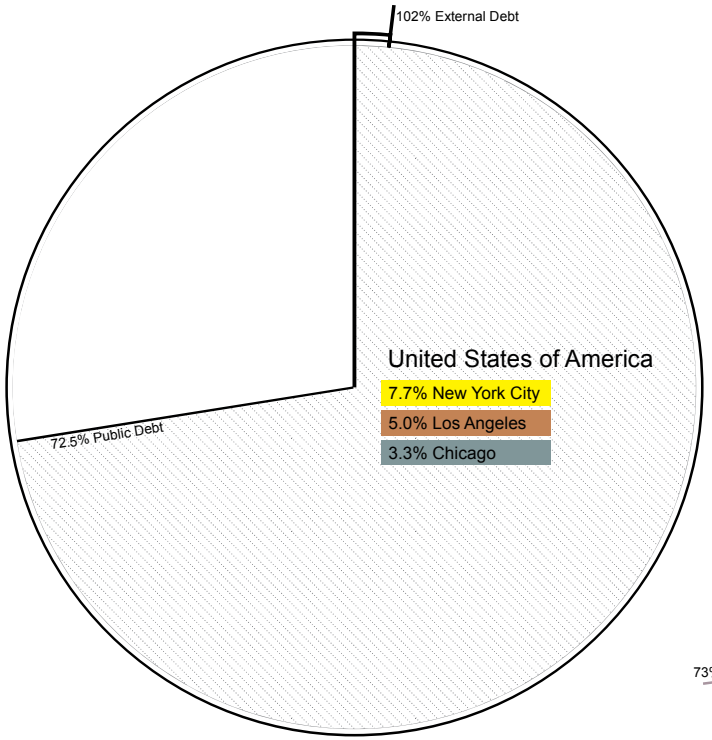


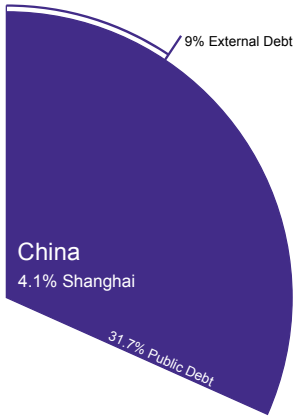
JEFF PETRICK

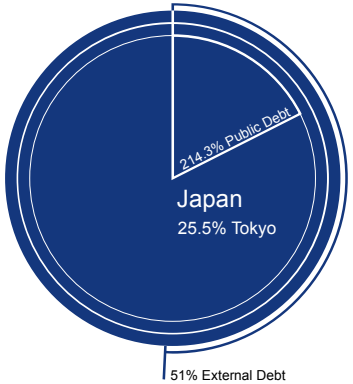
GDP AND DEBT

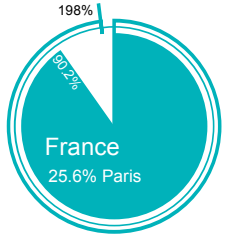
Debts owed by national governments

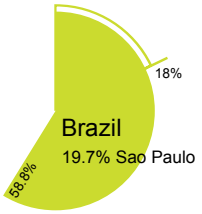
Public Debt is the cumulative total of borrowings by the National Government from accounts of the country's own currency therefore maintains wealth within the country when repaid.
External Debt is the total of all foreign currency liabilities and must be paid out via foreign exchange earnings.
In the below diagrams, both indicators are represented relative to each country's Total GDP.
Corresponding cities are represented with the city's share of the country's GDP.

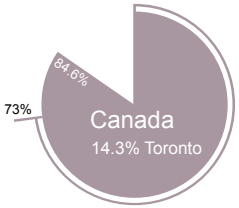


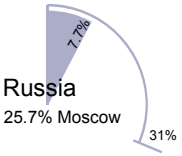


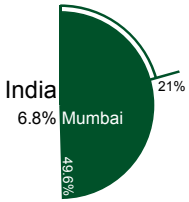


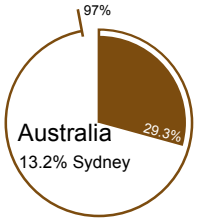


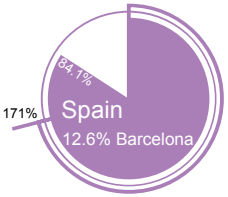


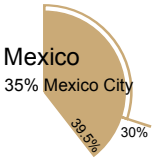


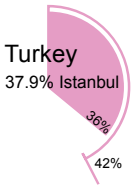


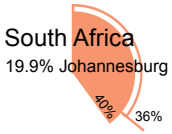


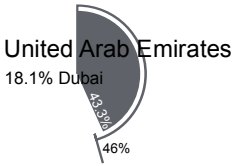


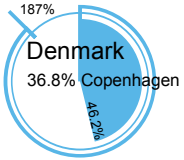


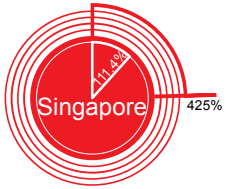


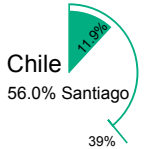








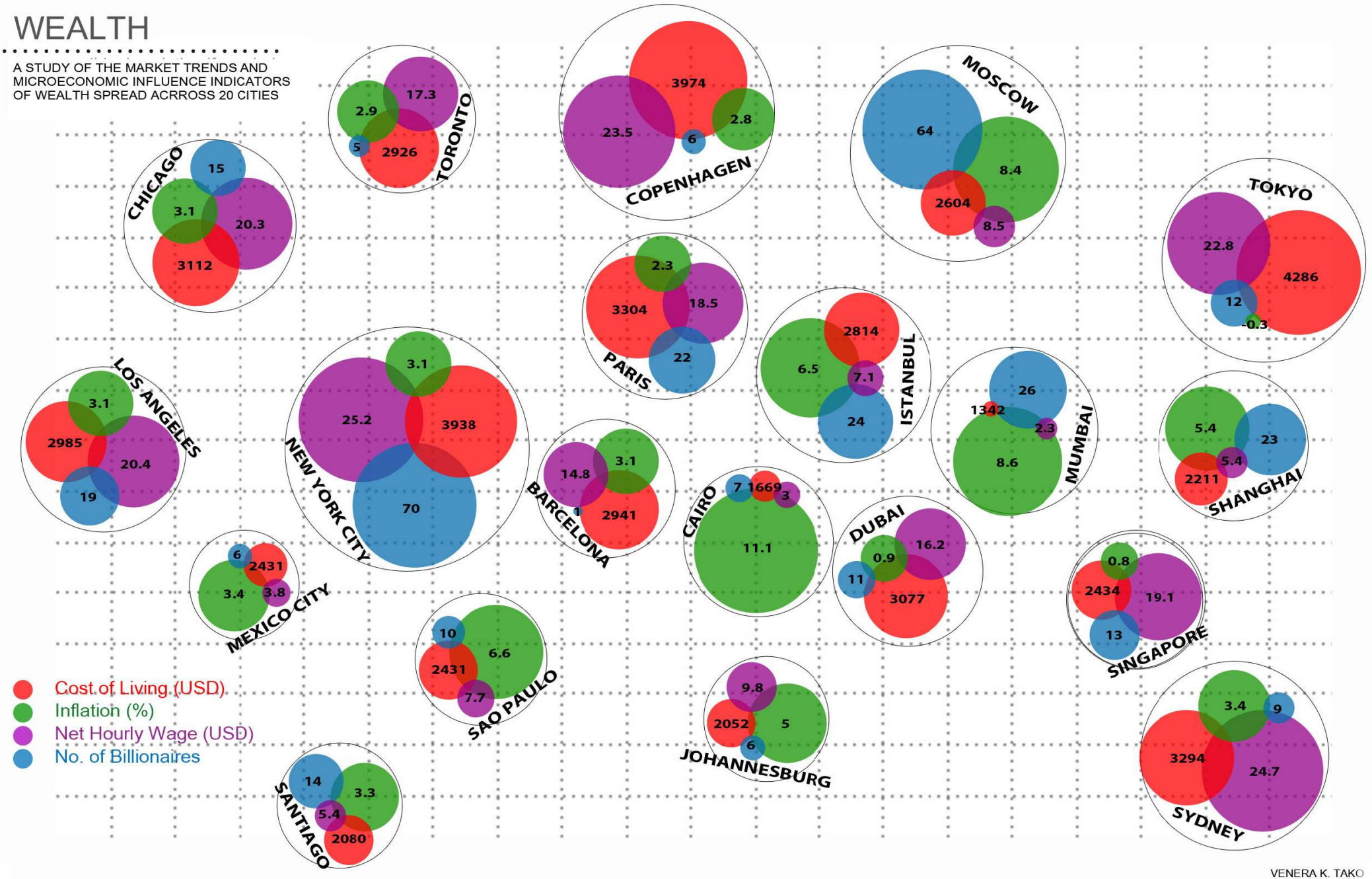




T. Ko Simmel

WEALTH

A STUDY OF THE MARKET TRENDS AND MICROECONOMIC INFLUENCE INDICATORS OF WEALTH SPREAD ACRROSS 20 CITIES

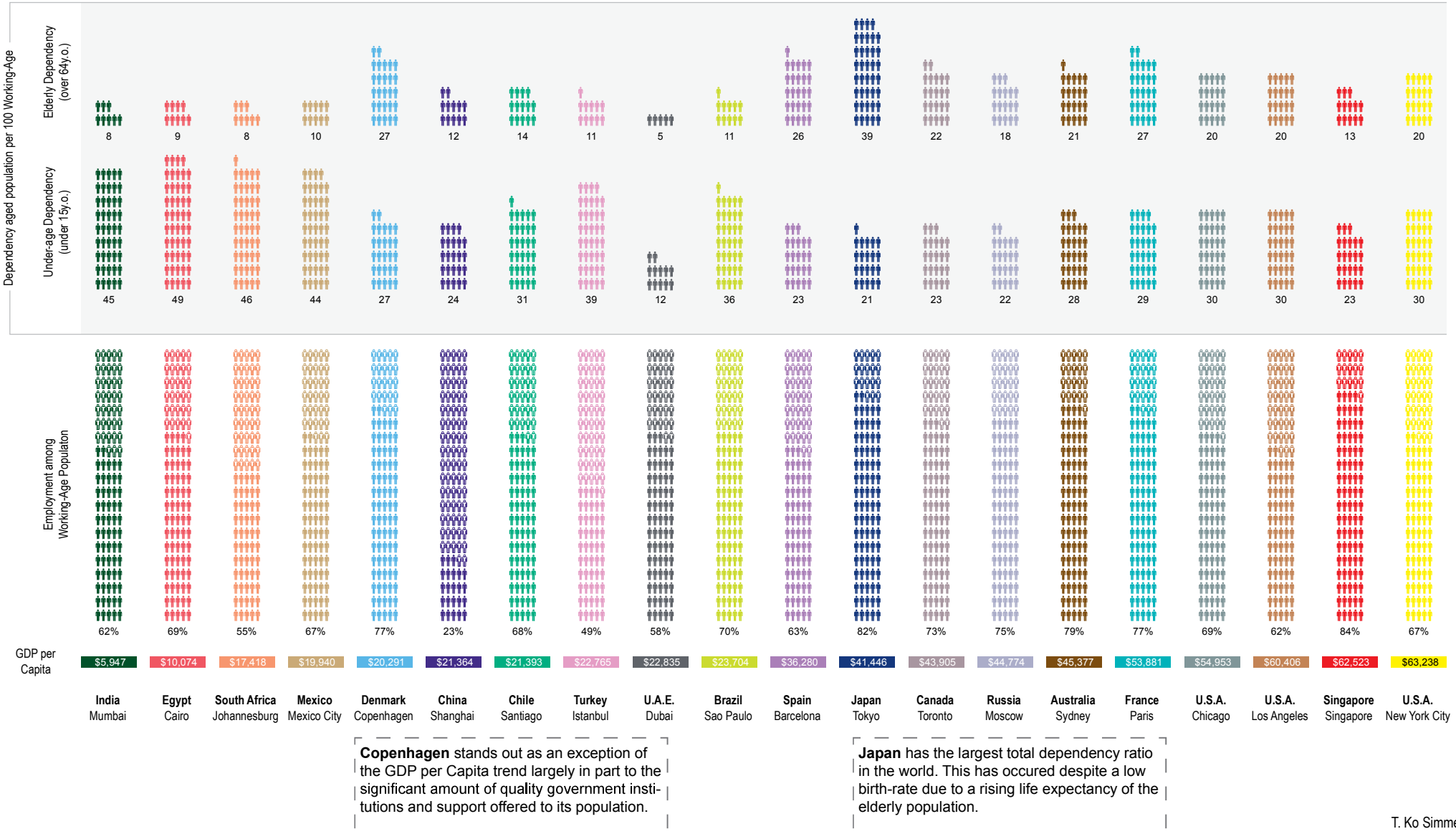


VENERA K. TAKO

WORKFORCE DEPENDENCY

Proportions of the population supported by the working-age population (16 ~ 64 y.o.)

Cities are represented below in order of lowest to highest **GDP per Capita** in order demonstrate the relationship between wealth and the dependency ratios. A notable observation from this relationship is that in most cases, with greater wealth comes fewer children and a larger elderly population.



Copenhagen stands out as an exception of the GDP per Capita trend largely in part to the significant amount of quality government institutions and support offered to its population.

Japan has the largest total dependency ratio in the world. This has occured despite a low birth-rate due to a rising life expectancy of the elderly population.

T. Ko Simmel